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Pholiota Notebook 4

L. R. Hesler

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Sm - 10627 -

Naematoloma subochraceum



Sm. 70838 - *Naematoloma capnoides*



Phaeomarasmium confragosa
Bigelow 10160 : ~~Rhodiota~~
same as 2970, 3024, 3055, 3082

~~Pholiotia erinacea~~ x1



Pholiotia

SM-4285 (no specimen)



Pholiotia

mus 32393

No specimen



Pholiota sm. 79⁸ X1

~~*subfulva*~~ *betulina*?

Make new print!



?



Pholiot

Sm 33-604



Harding -12 - *Pholiota alboarenulata*
No specimen here

Dryophila



Sm-3914 - *Pholiota albivelata*

No notes or specimens here

see better print

Pseudostropharia



Sm-15060 - *Pholiota curvipes*

~~The notes or specimen of this.~~
see better print

Hemipholiota

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PHOLIOTA

KEY TO SECTIONS

1. Habitat on burned wood or in recently burned areas usually close to wood Sec. Ignicola - 1
1. Habitat not as above 2
2. Cuticle of pileus an irregular palisade of clavate cells with pilocystidia intermixed; spores ocher yellow in KOH Sec. Murrilliana - 4
4. P. Murrilliana is only species known.
2. Not as above 3
3. Pileus viscid; pleurocystidia none; neither pileus nor stipe with distinct recurved squamules; color of fructification yellow to yellow brown series; annulus absent or thin and evanescent . . Sec. Alnicola - 6
3. Not with above combination of characters 4
4. Pileus and stipe typically conspicuously scaly; pleurocystidia not projecting appreciably if present Sec. Pholiota - 14
4. Not as in above choice 5
5. Pleurocystidia present or chrysocystidia; annulus persistent and membranous; pileus glabrous and "army brown" to "fawn color" Sec. Albivela - 19
5. Not as above 6
6. Pleurocystidia none 7
6. Pleurocystidia present 8
7. Spores 8 - 11 μ long or more (if only 8 - 11 μ long then 6 - 7 μ broad in face view) . Sec. Pseudohebeloma - 20

7. Spores $6 - 10 \times 4 - 5 \mu$ Sec. Pholiotoidea - 23

8. Pileus lacking a viscid pellicle Sec. Cyathicolae 29

8. Pileus with a gelatinous pellicle . Sec. Flammula 32

Spores less than or up to 7μ - Subsec. Polychorae - 32

Spores more than 7μ - Subsec. Heterosporae - 53

PHOLIOTA
SECTION IGNICOLA
KEY TO SEPCIES

1. Pileus and stipe at first with bright ferruginous
squamules 1. P. Carbonaria Smith.

1. Pileus glabrous or, if with squamules these
pale to whitish yellow 2

2. Spores $5.5 - \overset{7.5 \times 3.8-4.5}{\cancel{6.5 \times 4.5}}$; pileus 3 - 7 cm.
broad 2. P. ~~Carbonaria~~ friesiana Sm-3462

~~2. Spores 7 - 8 x 4 - 4.5 μ ; pileus 1 - 3 cm.
. 3. P. friesiana~~

Pholiota carbonaria Smith

SM - 3406

Pileus 2 - 4 cm. broad, convex with ^{an in} ~~a~~ curved ^{margin} ~~in margin~~ beautifully appendiculate with remains of the veil, expanding to plane or with slight umbo, rarely the disc slightly depressed, "warm buff" to "antimony yellow" young, becoming darker and finally nearly cinnamon brown in age on the disc, the margin remaining paler, surface viscid, covered at first by concentric rows of small nearly "hazel" or "ferruginous" fibrillose scales, more or less glabrescent; ^{Context} ~~flesh~~ watery brown, thick in the disc; odor and taste not distinctive.

Lamellae ~~crowded~~, bluntly adnate, narrow, ^{crowded,} equal, white to ^{grayish} ~~pallid~~ when young, becoming nearly snuff brown at maturity, edges slightly crenulate.

Stipe 3 - 6 cm, long, 4 - 6 mm, thick, equal or somewhat compressed or terete, fibrous, dingy watery yellowish within, solid, becoming tubular at least in apical region, surface covered by small "hazel" to "ferruginous" fibrillose squamules from the remains of the veil, squamules often recurved, ground yellowish but darkening slightly below, apex pruinose.

Spores 5 - ⁷⁽⁸⁾ ~~6.5~~ x ^{3.5} ~~4~~ - 4.5 μ , ellipsoid, smooth, dark reddish tawny in water mounts of fresh material, nearly dull cinnamon brown in KOH; ^{germ-pore minute.} Basidia 4 - spored, 18 - 23 x 6 - 7 μ , yellowish in KOH; ^P ~~pleurocystidia~~ abundant, 50 - ⁸⁸ ~~85~~ x 9 - 14 μ , fusoid ventricose with obtuse or rarely subcapitate apices,

Pholiota carbonaria Smith, cont.

when fresh some with adhering amorphous material around the apex, smooth in KOH, hyaline or with yellowish content in the neck or throughout, ^{rarely the apex forked in Smith-54261;} thin-walled; cheilocystidia abundant, 25 - ⁴⁷38 x ⁷3 - 13 μ , clavate to subfusoid or obscurely fusoid ventricose, walls ochraceous in KOH, smooth or some slightly incrusted; Gill trama hyaline, interwoven, floccose, some sections showing a slight gelatization of the subhymenium. Pileus trama floccose-interwoven and yellowish hyaline in KOH. ^{ium}Hypoderm ^{cuticle}rusty brown, and ^{cuticle}pellicle hyaline to yellowish, of interwoven hyphae 2 - 3.5 μ diam. Clamp connections present. *Cheilocystidia none.*

Habit, habitat and distribution: Cespitose-gregarious on a burned area near Lake Tahkenitch; Reeds Port, Oregon, Nov. 10, 1935, Sm-3406. Common along the Pacific Coast.

Observations: The ferruginous veil and habitat on burned soil are distinctive but the color of the veil fades and in old caps may be merely ochraceous. The much more pronounced veil, however, will serve to distinguish faded specimens from *Pholiota bicarinata*.

X 2

huminescens
frederici (~~*carbonaria*~~) (7.7) Sing.
Pholiota Sm-3462.

Pileus 3-7 cm/ broad, convex with a curved in margin, expanding to plane or retaining a low umbo, at times slightly depressed around the umbo, surface glutinous to viscid and at first sparsely decorated with small whitish fibrillose squamules from the remains of a veil, soon glabrescent, color typically dark brown ("Prout's brown" to ^gchestnut brown" or "tawny olive" to "snuff brown") fading at times to near "apricot orange" over the margin; flesh rather thick, dingy watery brown, odor and taste mild.

Lamellae crowded, whitish, becoming dull cinnamon, narrow and in age adnexed, edges even or nearly so.

Stipe 4-6(9) cm/ long, (4)8-10 mm/ thick, equal, whitish to ivory yellow, covered below by concentric fibrillose zones of citrine yellow veil remnants, staining tawny in age or where handled.

Spores ^{7.5}5.5-~~6.5~~ × ^{3.8-4.5}~~4~~ μ elliptic to ovate in face view and subelliptic in side view, dark rusty brown in KOH, smooth, apical pore very minute; basidia 4-spored, ⁷⁰2-23 × 5-6 μ, hyaline in KOH; pleurocystidia abundant, 50-70 μ 9-14 μ, apices obtuse, mostly yellow to orange brown in KOH, some with debris (amorphous) encrusting the exterior and content of some wrinkled so as to remind one of chrysocystidia, ^{ch}mostly 24-35 × 8-11 μ, ventricose and tapered to obtuse apices, often with "reticulated" content in KOH; ^ggill trama with a yellowish central strand of subparallel hyphae flanked by narrow gelatinous layers of subhymenium, Pileus

Pholiota Sm-3462. Cont.

trama floccose interwoven to the hypoderm of enlarged (15-30 μ) radial, heavily pigmented hyphae, above this a gelatinous pellicle yellow hyphae in tangled arrangement suggesting a basic turf structure. Clamp connections present.

Habit, habitat and distribution: Cespitose to scattered on burned areas, Siltcoos Lake, Ore. Nov. 10, 1935.

Sm-3462.

Observations: Compare carefully with F. carbonaria ^{Notes by Hesler} ~~F.~~ ^{than in typical friesenii}

In 3462, The caps are slightly larger, the stems longer. flesh dingy watery brown, gills narrow, veil remnants yellowish. These seem hardly sufficient differences to warrant a ^{separate} ~~different~~ entity (see Bunge f. gigantea)

highlandensis
~~*fissurina*~~

Pholiota ~~carbonaria~~ (get a new name) Sm-44803 ✓

Flammula carbonaria Fries

Pileus 1 - 3 cm/ broad, obtuse to convex with an incurved margin, expanding to broadly convex to nearly plane or retaining a low obtuse umbo, glabrous except for veil remnants along the margin which eventually disappear, "Russet" to "tawny" or in exposed areas "Verona brown" to near "wood brown" and almost "mummy brown" (blackish) after exposure to strong sunlight, typically hygrophanous and fading to various shades around "ochraceous buff", viscid when moist, somewhat fibrillose streaked beneath the cuticle; ^{Cortex} flesh pallid; taste slightly disagreeable to none. odor not distinctive,

Lamellae pallid to avellaneous when young, finally dull cinnamon brown, close, moderately broad, adnate or rounded-adnate, margins even to slightly eroded.

Stipe (1) 2 - 4 cm/ long, (2) 3 - 6 (9) mm/ thick at apex, typically narrowed downward, apex whitish to mustard yellow at first, dingy brownish in age, lower portion pallid at first but in age darker brown than apex, covered with zones or patches of the yellow to "cinnamon buff" veil up to the fibrillose annular zone, in age somewhat glabrescent.

Spores ^{5.5-7.5 x 3.8} ~~7-8~~ x ~~4~~ - 4.5 μ , oblong to ellipsoid, not compressed, smooth, cinnamon brown in KOH, with a minute apical pore, smooth; Basidia 4-spored, 20 -24 x 6 - 7 μ ,

Pholiota carbonaria (get a new name) Sm-44803, cont.

hyaline in KOH or nearly so; *Pleurocystidia* abundant,
40 - 56 x 9 - 14 μ , fusoid-ventricose, but evenly and only
slightly tapered, from broadest part to the obtuse apex,
smooth, thin-walled, content hyaline to faintly yellowish;
Cheilocystidia clavate to ventricose with only a slightly
narrowed neck and rounded apices, thin-walled, hyaline
to yellowish in KOH; Gill trama with a floccose-interwoven
central strand flanked on either side by gelatinous sub-
hymenium; Pileus trama of compactly interwoven hyaline
hyphae with inflated cells, hypoderm of rusty brown hyphae
of the same diameter as in the hyaline flesh; Cuticle
a thick tangled turf of narrow (2 - 3 μ) hyaline gelatinous
hyphae; clamp connections present.

Habit, habitat and distribution: Subcespitose-
gregarious in burned areas, often very abundant, throughout
the northern United States and Canada.

Observations: Here, again, the gelatinous cuticle is
not a pellicle of appressed hyphae. The small size and
habitat are distinctive. The colors are variable, and
sterile or semi-sterile forms are occasionally found in
which yellow is more pronounced in the veil, gills, and stipe.

Pholiota

Sm-9140.

pulchella

X 4 5

Pileus 2-3.5 cm/ broad, convex and remaining so, glutinous, at first with evanescent, fibrillose squamules along the margin in 1-3 rows, the squamules yellowish, disc "Saccardo's umber" to "Isabella color" or with a somewhat tawny tinge, margin pale yellow to "olive buff" and ^{hanging} hung with veil remnants. ^{Context} Context + "Isabella color, watery pliant; odor ^{and} taste not distinctive.

Lamellae "barium yellow" becoming dingy greenish yellow, and finally earth-brown from the spores, broad, bluntly adnate to slightly adnexed, subdistant (25-30 reach stipe).

Stipe 4-5 cm/ long, 4-6 mm/ thick, equal, hollow, "barium yellow" above, a dingier yellow below, and somewhat fibrillose-squamulose from the veil remnants, the squamules becoming tawny.

Spores 6-7 x 5-5.5 x 5.5-6.6 μ , broadly elliptic in side view, broadly ovate in face view, cinnamon brown in KOH, exceptionally thick walled (+ as in Singeromyces) but cinnamon brown in KOH, smooth, apical pore distinct and apex obscurely truncate. Basidia 4-spored, 20-23 x 6-7 μ , golden yellow in KOH (in sections of hymenium). ^P Pleurocystidia abundant, fusoid-ventricose with obtuse to subacute apices, 50-75 x 10-15 μ , often with constrictions in the neck, walls pale yellow in KOH, not appreciably thickened; cheilocystidia similar to pleurocystidia or smaller. Gill trama with a yellow (in KOH) floccose central strand of subparallel hyphae, flanked by very narrow subgelatinous layers of subhymenial tissue. ^P Pileus trama floccose-interwoven, and yellowish in KOH, hypoderm of fulvous, incrustated hyphae and

veil arched, yellow.

Pholiota Sm-9140. Cont.

above this a pellicle of yellow incrustated hyphae, 3-5 μ diam., gelatinous, and of basically a turf structure but very tangled and hyphae much branched; Clamp connections present.

~~Habit, habitat and distribution: Scattered on soil under pine in a burned area, Patrick Creek, Suskeyou Nat. Forest, Calif. Nov. 26, 1937, Sm-9140.~~

Observations: In spore characters, this shows a definite trend toward Singeromyces (see S. Cookei) but the spore color in KOH is not red enough. By the shape of the spores, the relatively broad germ pore, and the characters of the cystidia and subhymenium it is clearly distinct.

Notes by Hesler

Spores 6-7.5 x 5-5.5 μ , ovoid or ellipsoid, smooth, wall thick, pore present, in some the apex is obscurely truncate. Basidia 22-26 x 6-7 μ , 4-spored. St. 56-70 x 11-16 μ , ventricose to fusoid-ventricose; Ch. 28-38 x 8-11 μ , fusoid or ventricose. Gill trama a mediotrache, hyphae yellowish in 2% KOH, subparallel, 3-5 μ broad, flanked by a gelatinous subhymenium (Smith says subgelatinous).
(over)

Clamps present. Caulocystidia present in tufts, $42-80 \times 7-15\mu$, cylindric or ~~cap~~ clavate, at times broadly fusoid.

~~Section Agaricus Rehderi !~~

PHOLIOTA

SECTION MURRILLIANI

P. murrilliana is only species known to date.

7
Agaricaceae
Pholiota Murrilliana nom. nov.

4
cf. P. rugosa + reticulata
Hebeloma praecox Murrill, Mycologia 3: 166. 1911.

Pileus 4 - 5 cm. broad, convex to expanded, slightly umbonate, surface dry, glabrous, opaque, smooth, ochraceous-isabelline, margin incurved, entire or undulating, showing no trace of a veil; context white, sweet, odor pleasant.

Lamellae sinuate, arcuate, crowded, many times inserted, pallid when young, fulvous at maturity.

Stipe 3 - 4 cm. long, 5 - 8 mm. thick, fleshy, brittle, subequal, stuffed to hollow, finely scabrous, sometimes rough, cremeous.

Spores 5 - 6 x 3.5 - 4 μ , ovate in face view, obscurely bean-shaped to slightly inequilateral in side view, smooth, thick-walled, no apical pore visible, ocher yellow in KOH; basidia 4-spored, 18 - 20 x 4 - 5.5 μ , nearly hyaline in KOH; pleurocystidia none; cheilocystidia 15 - 26 x 4 - 9 μ , fusoid-ventricose with obtuse apices or irregular in shape but apices obtuse, hyaline, thin-walled, smooth; gill trama subparallel, yellowish hyaline in KOH, subhymenium not distinctive; pileus trama evenly floccose-filamentose to the cuticle, yellowish in KOH; cuticle ^{an} on irregular palisade of clavate cells 30 - 40 x 10 - 20 μ , yellow in KOH; smooth, numerous pilocystidia with obtuse to capitate apices, yellow content, and irregular in shape below (from ventricose to flexuous and subequal) 26 - 40 x 7 - 12 μ ; clamp connections present.

Pholiota Murrilliana, nom. nov., cont.

Habit, habitat and distribution: Among masses on shady banks, New York Botanical Garden.

Observations: This species is properly placed in Pholiota and is close to Gymnopilus. It has none of the characters of Hebeloma. The truly yellow spores, even when revived in KOH, their smooth surface, and lack of a germ pore are important features. The cuticle is peculiar for Pholiota, but neither is it typical of Conocybe. In other words, the species is an anomalous one for which, to me at present, there are no close relations known.

PHOLIOTA
SECTION ALNICOLA
KEY TO SPECIES

(Hebeloma [?] ~~Anterium~~ ^{in Hebeloma?})

- | | |
|---|---------------------------------------|
| 1. Stipe pearly white and not darkening | 6. <u>P. thompsonii</u> |
| 1. Stipe yellow or darkening at base or both | 2 |
| 2. On or near hardwood--stumps, dead trees, etc. . | 3 |
| 2. Terrestrial or on or near Conifer wood | 4 |
| 3. Odor aromatic--very pronounced | 7. <u>P. Sm-33906</u> |
| 3. Odor none or slightly fragrant | 8. <u>P. malicola</u> |
| 4. Stipe yellow over all or with slight
ferruginous stains <u>but not darkening</u>
<u>from base upward</u> | 9. <u>P. Sm-19387</u> |
| 4. Stipe darkening from base upward | 5 |
| 5. Odor faintly fragrant | 10. <u>Sm-46585</u> & <u>Sm-19395</u> |
| 5. Odor none | 11. <u>Sm-19193</u> & <u>Sm-24085</u> |

Spores 5-7 x 3.5-4; odor honey. -- mellea
 Sp 7-9 x 4-5 μ ; odor faintly
 fragrant -- -- -- Sm-46585 + 19395

→ (My study of Type shows it to be Hebeloma.)

Pholiota Thompsonii, nomen nov.

→ Hebeloma luteum Murrill, N.A.Fl. 10: 222. 1917.

Pileus 5 - 10 cm. broad, convex to plane, fleshy, surface smooth, glabrous, viscid, luteous, margin ochraceous, entire, not striate.

Lamellae sinuate, ventricose crowded, melleous to ferruginous.

Stipe 5 - 7 cm. long, 7 - 15 mm. thick, equal or tapering upward, smooth, dry, glabrous, pearly white; veil fibrillose slight, evanescent.

Spores $7.5 \times 9 \times 4.5 - 5.5 \mu$, obscurely inequilateral in side view to elliptic, ovate to elliptic in face view, smooth, buckthorn brown in KOH, no apical pore visible; basidia 4-spored, $20 - 24 \times 7 - 8 \mu$, hyaline in KOH; pleurocystidia none; cheilocystidia basidium-like as far as could be determined; gill trama subparallel, subhymenium not gelatinous, pileus trama of floccose interwoven hyaline hyphae up to the yellow brown (in KOH) hypoderm, above this a thick gelatinous pellicle of hyaline narrow ($2 - 3 \mu$) tangled hyphae; clamp connections present.

Habit, habitat and distribution: Solitary on the ground in woods, Stockbridge, Mass., Sept. 3 - 4, 1911, Murrill and Thompson.

Observations: This is clearly a *Pholiota*, but does not appear to belong in the *P. malicola* group. The lack of pleurocystidia cuts out the *P. lenta* group. The lack of cystidia, the viscid pileus, and pearly-white stipe should help in identifying it.

But, Hebeloma luteum has rough, Hebeloma-LK. spores

7
Pholiota Sm-33906

malicola var. *fragrans*

Pileus 3 - 6 cm. broad, obtusely conic with an incurved margin, expanding to broadly conic or nearly plane, at first with scattered patches of veil tissue along the margin, viscid and lemon yellow over all, dingy yellow with age; flesh pale yellow, odor sweetish-fragrant as in Armillaria coligata.

Lamellae pale yellow becoming ochraceous tawny, narrow, bluntly adnate to short decurrent, close to crowded, edges fimbriate.

Stipe 6 - 12 cm. long, 5 - 9 mm. thick, base narrowly bulbous, surface rather coarsely fibrillose and with appressed patches of fibrils from remains of veil, some squamulose, becoming pale bister from the base up, apex yellow, pith bright yellow but cortex pale bister ("snuff brown"), with an apical evanescent fibrillose zone.

Spores 9 - 11 (12) \times 4.5 - 5.5 (6) μ , inequilateral in side view, ovate in face view, smooth, thick-walled, nearly "cinnamon brown" in KOH, apical pore very minute; basidia 4-spored, 23 - 25 \times 6 - 7.5 μ , yellowish in KOH; pleurocystidia none; cheilocystidia clavate to subcapitate, 20 - 25 \times 6 - 8 μ , pale yellow to hyaline in KOH; gill trama interwoven, pale yellow in KOH, subhymenium narrow and not distinctive; pileus trama floccose-filamentose, yellowish in KOH, hypodermal region rusty ochraceous and a thin gelatinous pellicle of yellow hyphae 3 - 5 μ in diam. and radially appressed; clamp connections present.

Pholiota Sm-33906, cont.

Habit, habitat and distribution: Cespitose by a birch stub, The Gorge, University of Michigan Biological Station, Cheboygan County, Michigan, Sept. 18, 1949, Sm-33906.

Observations: The fragrant odor, relatively large dark (in KOH) spores, yellow cap darkening stipe and lack of pleurocystidia are distinctive.

~~I have not seen collection No. 33906.~~

var. fragrans
DM-32508

Pholiota malicola (Kauff.) Smith, Ann. Myc. 32: 480. 1934.

Flammula sulphurea Peck, Bull. N. Y. State Mus. 157: 26.

1912 (non *F. sulphurea* Massee)

Flammula alnicola var. *marginalis* Peck, N. Y. State Mus.

Rept. 54: 167. 1901.

Flammula malicola Kauffmann, Amer. Jour. Bot. 13: 24. 1926.

Pileus 3 - 6 (8) cm, broad, evenly obtusely conic at first, remaining so in age or becoming conic campanulate, finally nearly plano-umbonate, slimy viscid at first but soon dry and shining, at first decorated with thin patches of brownish fibrils from the veil, glabrescent, evenly "wax yellow" to "straw yellow" or with a greenish tinge and then sulphur yellow, fading as though slightly hygrophanous, margin opaque, ^{Context} flesh pliant, yellowish; odor and taste not distinctive, or odor merely slightly fragrant.

Lamellae narrow, tapered evenly to the cap margin, adnate to sinuate, close to crowded, concolorous with pileus at first but finally "Kaiser brown" (reddish cinnamon) from the spores.

Stipe 4 - 10 cm, long, 4 - 7 mm, thick, equal or nearly so, fibrous, solid, pallid to yellowish within, surface at first concolorous with pileus or apical region whitish, darkening to tawny below, veil remnants distributed as patches of fibrils below the superior annulus or annular zone and becoming tawny like the base; annulus often poorly formed and evanescent.

Pholiota malicola (Kauff.) Smith, cont.

Spores "Hazel" to "cinnamon rufous" in mass, 9 - 11 (12) \times 4.5 - 5.5 (6) μ , inequilateral in side view, ovate to subelliptic in face view, smooth, thick walled, apical pore minute, dark ochraceous tawny in KOH; basidia 4-spored, 26 - 32 \times 7 - 8 μ , hyaline in KOH; pleurocystidia none; cheilocystidia small and inconspicuous, 20 - 26 \times 7 - 9 μ , fusoid-ventricose with obtuse apices, hyaline, smooth; gill trama yellowish-hyaline in KOH, floccose and interwoven, subhymenium not distinctive; pileus trama floccose-filamentose, beneath a gelatinous pellicle of yellow, appressed, narrow (3 - 4.5 μ) slightly roughened hyphae, no hypoderm distinguishable by structure or only slightly by color; clamp connections present.

Habit, habitat and distribution: Cespitose-gregarious on or around hardwood stumps and logs, often abundant during wet seasons in late summer or fall. (Sm-32508, Ann Arbor, Sept. 30, 1932).

Observations:

malicola var. *mesospora*
 Pholiota Sm-19387. studied

Pileus 3-5 cm/ broad, obtuse with an incurved margin, expanding to broadly convex or with a slight obtuse umbo, surface viscid at first, with veil remnants distributed in a zone near the margin and margin fringed with them, color between ocher yellow and buckthorn brown moist, hygrophanous and usually a brighter yellow when faded (near "Naples yellow"), not striate; ^{Contour} ~~rich~~ thin and cartilaginous, yellow, pliant, odor and taste not distinctive.

Lamellae close, narrow (4-5 mm), adnate becoming adnexed, pale yellow when young (about concolorous with apex of stipe), near ochraceous tawny at maturity, edges even.

Stipe 6-11 cm/ long, 6-9 mm/ thick, at apex, slightly enlarged downward, tubular, cartilaginous pliant, surface more or less fibrillose, yellow over all ("primate^{uline} yellow" at base, "straw yellow" at apex), drying pale golden yellow, ferruginous surface stains at base, not darkening from base up as in P. malicola.

Spores 7-9 x 4-4.5 μ , somewhat inequilateral in side view, narrowly ovate in face view, ocher yellow to ochraceous tawny in KOH, smooth, apical pore very minute; basidia 4-spored, 23-25 x 6-7 μ , yellowish in KOH; pleurocystidia none; cheilocystidia filamentose and 18-25 x 3 μ as well as fusoid-ventricose and 18-23 x 4-7 μ , hyaline to yellowish, smooth; gill trama subparallel to interwoven, ochraceous in KOH, subhymenium narrow, floccose and not distinctive; pileus trama floccose-interwoven and + yellowish beneath a rich fulvous hypoderm (in KOH) of narrow

Pholiota Sm-19387. Cont.

compactly interwoven hyphae; cuticle a very tangled turf of narrow (2-4 μ) gelatinous hyaline to yellow hyphae becoming more or less appressed over the surface and brownish; clamp connections present.

Omit
Habit, habitat and distribution: Cespitose on a very decayed (conifer?) log, East Fork, Salmon River, Mt. Hood, Ore. Oct. 2-1944. Sm-19387.

Copy
Observations: The non-darkening stipe, bright yellow colors, lack of pleurocystidia and small inequilateral spores are distinctive. It is very closely related to P. malicola.

10

X

Malicola var. occidentalis
Pholiota Sm=19395.

Pileus 4.5 cm/ broad, obtusely campanulate, glabrous except for remains of the fibrillose yellowish veil along the margin, viscid, margin faintly striatulate, hygrophanous, "Isabella color" on margin, "^{uline}primitive yellow" to "mustard yellow" around the disc, disc tinged orange, ^{cuticle} ~~flesh~~ thin, pliant, concolorous with surface; odor faintly fragrant, taste mild.

Lamellae crowded, moderately broad, broadest at the stipe, tapered to the margin (5 mm/ broad), bluntly adnate, "Sudan brown", edges even.

Stipe 10 cm/ long, 5 mm/^{thick} at apex, tapered down to a point, more or less appressed fibrillose and ^{un} ~~em~~ polished, concolorous with gills, except for extreme apex which is yellowish.

Spores ⁷⁻⁹ ~~8-10~~ \times 4.5-5 μ , somewhat inequilateral in side view, ovate in face view, smooth, apical pore very minute, ochraceous tawny in KOH; Basidia 4-spored, 20-23 \times 5-6 μ , yellow in KOH (sections of hymenium); ~~P~~leurocystidia none; cheilocystidia irregular in shape from a basically clavate pattern, 20-26 \times 5-9 μ , or obscurely fusoid=ventricose; Gill trama interwoven and of inflated cells, yellowish in KOH, hyaline in H₂O, sub-hymenium not distinctive; ~~P~~ileus trama ~~f~~laccose=interwoven in KOH and yellowish, with a hypoderm greenish yellow in H₂O fresh, and rusty brown revived in KOH. ~~P~~ellicle a thick layer of appressed to interwoven yellow hyphae 3-5 μ in diam. and slightly roughened; ~~C~~lamp connections present.

Habit, habitat and distribution: Single on a rotten conifer log, East Fork, Salmon River, Mt. Hood, Ore. Oct. 2, 1944,
Sm-19395.

Pholiota Sm-19395. Cont.

Observations: This had the aspect of a *Phaeolepiota* but appears to be close to *P. malicola*.

Notes by Hesler

Spores ~~8-10.5~~⁷⁻⁹ x 4.5-5.5(~~6~~) μ , ellipsoid to ovoid in face view, slightly inequilateral in profile, smooth, germ-pore minute. Basidia 23-27 x 5-6 μ , (2)4-spored. H. none; ch. 25-30 x 4-6 μ , subcylindric, subclavate, at times somewhat constricted, not ~~con~~ very conspicuous. Gill trama of slightly interwoven hyphae, 3-7 μ broad. Subhymenium not distinctive. Stems trama radial. Cuticle a glaucous zone, resting on a brownish hypodermium. Clamp connections present. Caulocystidia 30-45 x 3-5 μ , scattered to rare.

var. *occidentalis*
var. *fragrans* X

Pholiota ~~near~~ malicola (Sm-46585) ~~var.~~

Pileus 3-7 cm, broad, convex, expanding to broadly convex or nearly plane, margin incurved at first, surface thinly viscid and glabrous except for faint veil remnants variously arranged along the margin, ~~pale~~ yellow to watery dingy ochraceous-tawny, near "warm buff" or brighter where faded, and often with a watery zone along the margin; ^{Context} ~~flesh~~ rather thick and firm, yellowish; odor faintly fragrant, taste mild.

to "Sudan brown"

Lamellae pallid when young, pale rusty brown in age, narrow to moderately broad, adnate to adnexed, thin, edges even, no color change when bruised, ⁵ edges even.

Stipe (4) 6 - 10 (12) cm, long, ⁵ 8 - 15 mm, thick, equal or narrowed below, solid, ~~but soon tunneled by grubs and~~ ~~rusty ochraceous around the worm holes,~~ surface pallid and silky above, with a faint evanescent zone of fibrils from the thin veil, lower part fibrillose-striate, becoming dark rusty brown from base upward. Veil yellowish.

Spores 7 - 9 × 4 - 5 μ, obscurely inequilateral in side view, in face view ovate, smooth, tawny in KOH, apical pore very minute; Basidia 4-spored, 20 - 22 × 5 - 6 μ, hyaline in KOH; ^l Pleurocystidia none; cheilocystidia inconspicuous, 18 - 28 × 6 - 9 μ, clavate to contorted or slightly ventricose with obtuse apices, content often yellowish in KOH; ^l Gill trama parallel to slightly interwoven and subhymenium not distinctive - merely a thin zone

Pholiota near malicola (Sm-46585), cont.

of non-gelatinous narrow intricately interwoven hyphae;
Pileus trama floccose-interwoven and hyaline in KOH, hyphal
cells equal to inflated; Cuticle a gelatinous layer of
appressed, interwoven narrow (3 - 5 μ) hyphae with
yellowish walls and ochraceous incrusting pigments; Clamp
connections present.

Habit, habitat and distribution: Cespitose around
conifer stumps and dead trees, Papoose Creek, Seven Devils
Mts., Idaho, August 23, 1954, Bigelow & Smith-46585.

Observations: The lack of gelatinous subhymenial
tissue, the viscid pellicle of colored hyphae not arranged
as a turf, the medium-sized spores, lack of pleurocystidia,
yellow pileus, and fulvescent stipe are distinctive. -

(Note by Hervey: near Sm-32508. This
seems very close to apiverea.)

12
Malicola var. macrospora
studeed
Pholiota Sm-19193.

Pileus 3-5 cm. broad, obtusely conic becoming convex, margin incurved at first, surface viscid, with scattered fibrillose patches at least along the margin which is fringed with whitish fibrils from the remains of the fibrillose veil, hygrophanous, "buckthorn brown" when moist, fading to "yellow ocher" and finally "ochraceous tawny" on the disc, fading on disc first and margin remaining "Isabella color" and moist but not striate; flesh pale yellowish white, thick in the umbo, odor and taste not distinctive, no color change when bruised.

Lamellae "honey yellow" to "chamois" young, pale ochraceous tawny at maturity, adnate, becoming slightly adnexed, narrow to moderately broad (± 5 mm.), close, 2 tiers of lamellulae.

Stipe 7-10 cm. long, 4-10 mm. thick, equal, stuffed, pith yellow (tawny in base) pale yellow at first but soon tawny at the base and upward, apex ~~x~~ remaining pale yellow, surface fibrillose from the remains of the veil, not leaving much of a zone (most remnants adhere to ^acap margin).

Spores 7-9(10) \times 4-5 μ , narrowly inequilateral in side view, narrowly ovate in face view, ochraceous tawny to tawny in KOH, smooth, apical pore very minute; basidia 4-spored, 20-25 \times 6-7 μ , hyaline in KOH or nearly so; pleurocystidia none; cheilocystidia 30-44 \times 6-9 μ , narrowly clavate to filamentous with obtuse to subcapitate apices, walls often flexuous, hyaline and smooth in KOH; gill trama interwoven, yellowish in KOH, subhymenium not distinctive; pileus trama floccose-interwoven and yellowish in KOH up to the rust-brown hypoderm of compactly interwoven

Pholiota Sm-19193. Cont.

hyphae above which is a thick gelatinous pellicle of interwoven to radial yellow narrow (3-5 μ) hyphae with pigment-encrusted walls; clamp connections present.

Habit, habitat and distribution: Cespitose on soil in woods of alder and conifers, East Fork, Salmon River, Mt. Hood Oregon, Sept. 28, 1944. Sm-19193.

Observations: Check for the needles or granules in ^{ammonia}~~ammonia~~ mentioned by Kühner & Romagnesi for P. alnicola.

malicola var. *mesospora*

X

Pholiota Sm-24085. (small malicola?)

Pileus 2-3 cm/ broad, shaply conic with an inrolled margin, expanding to conic-campanulate or broadly conic, the margin sometimes recurved, surface viscid to glutinous, glabrous except for a marginal zone of \pm triangular fibrillose patches of veil material, color "straw yellow" when young over all or margin paler and "berium yellow", becoming nearly "buckthorn brown" unevenly and at that time the margin striatulate; ^{inter} flesh rather pliant, odor and taste none; with a general tendency to stain rusty brown in age.

Lamellae "massicot yellow" becoming rusty brown, close, broad, bluntly adnate, edges even.

Stipe 5-7 cm/ long, 2-3 mm/ thick, equal or slightly enlarged at the base, cartilaginous, tubular; concolorous with gills when young, becoming dark rusty brown from base up in age, \pm fibrillose and with a faint fibrillose zone at first, in some slightly fibrillose striate.

Spores 7-9 \times 4.5-5 μ , obscurely inequilateral in ^{profile} ~~side view~~, ovate in face view, ochraceous tawny in KOH, smooth, apical pore minute; Basidia ^{4-spored} ~~4-spored~~, 24-25 \times 6.5-8 μ , hyaline in KOH;

Pleurocystidia none; cheilocystidia inconspicuous, 18-26 \times 5-8 μ , fusoid-ventricose with obtuse apices, smooth and yellowish hyaline in KOH; gill trama parallel or nearly so, hyaline in KOH, subhymenium very narrow and cellular (not at all gelatinous);

Pileus trama floccose-filamentose and nearly hyaline in KOH; hypoderm a faintly colored (tawny) zone and pellicle of appressed gelatinous yellowish to hyaline narrow hyphae (2.5-3.5 μ in diam.);

Pholiota Sm-24085. Cont.

Clamp connections present.

Habit, habitat and distribution: Densely gregarious along a roadside near rotten wood, Camp Creek Forest Camp, Mt. Hood, Ore. Oct. 4, 1946, Sm-24085.

Observations: The spores are smaller than in P. malicola.

~~Pholiota Sm-24085~~

PHOLIOTA

SECTION PHOLIOTA

1. "Picric yellow" over all including the veil
 12. P. Kauffmaniana
1. Color not as above 2
2. Pileus glutinous, russet when young,
 pale yellow in age; lamellae pale yellow
 when young ~~15~~ 13. P. squarrosa-adiposa
2. Not as above 3
3. Growing on hardwood; pileus with tawny to
 ochraceous tawny scales and whitish beneath
 14. P. squarrosoides
3. Not as above 4
4. Habitat terrestrial; pileus + Verona brown
 to warm sepia ~~17~~ 15. P. terrestris
4. Habitat typical on or about conifer wood;
 pileus yellow with clay color scales
 16. P. squarrosa
 18

Section Phallia

Key to species

1. Pileus distinctly scaly with dry squarrose to subsquarrose scales; never glutinous or distinctly viscid (subcutis gelatinous in P. squarrosoides) - - - - - 2.
1. Pileus distinctly viscid to glutinous (some scales may be present on the viscid layer) - - - - - 4.
2. Terrestrial, pileus dark vinaceous brown to dark reddish brown - - - - - P. ^{viscid!}terrestris
2. Lignicolous or if on soil close to stumps or attached to decaying wood - - - - - 3.
3. Pileus with a gelatinous subcutis, pileus color whitish beneath toamy more or less squarrose scales; spores $4-5.5 \times 3-4 \mu$ - - - - - P. squarrosoides
3. Pileus lacking a gelatinous subcutis; pileus with scales clay color to slanket; spores $6-8 \times 3.5-4.5 \mu$ - (if bright yellow see P. kauffmaniana) - - P. squarrosa
4. Pileus and gills "pinnic yellow"; spores $3.5-4.5 \times 2-3 \mu$ - - - - - P. kauffmaniana
4. Spores larger - - - - - 5
5. Spores $9-11 \times 6 \mu$ - - - - - P. auriculoides
5. Spores smaller - - - - - 6
6. Spores $5-6.5 \times 4-4.5 \mu$ - - - - - P. squarrosa-adiposa
6. Spores $6-8(9) \times 3.5-4.5 \mu$; scales on stipe gelatinous - - - - - P. adiposa
6. As above but scales on stipe dry and increasingly numerous downward - - P. auricula

SECTION PHOLIOTA

Key to Species

1. Pileus dry; stipe and pileus squarrose; spores 6-8 x 3.5-4.5 μ squarrosa
1. Pileus viscid or glutinous..... 2
 2. Spores 6-11 μ long..... 3
 2. Spores 4-6(7) μ long..... 5
3. Stipe scales dry, increasingly numerous downward..... aurivella
3. Stipe scales viscid..... 4
 4. Spores 6-8(9) x 3.5-4.5(5) μ adiposa
 4. Spores 9-11 x 6 μ aurivelloides
5. Pileus and gills "picric yellow"; spores (3.5)4-4.5 x 2-3 μ kauffmaniana
5. Pileus not colored as above; spores somewhat larger.. 6
 6. Lamellae at first pale yellow; pileus with spot-like scales; stipe squarrose..... squarroso-adiposa
 6. Lamellae not at first yellow..... 7
7. Pileus at first white or whitish, scales tawny; spores 4-5.5 x 3-4 μ , walls thin..... squarrosoides
7. Pileus at first colored, scales or fibrils darker; spores longer..... 8
 8. Pileus at first yellow, scales "amber brown"; lamellae white to olive-buff; spores 5-7 x 3-4.5 μ ; lignicolous..... subsquarrosa (sensu Smith?)
 8. Pileus at first brownish from dense fibrils or scales; lamellae pallid to pale-avellaneous; spores 5-6.5 x 3.5-4.5 μ ; terrestrial.... terrestris

Trama or squarrosoides

A.H.

Pholiota Kauffmaniana Smith

Mycologia 36: 254. 1944

Pileus (3) 4 - 8 (10) cm, broad, obtusely conic becoming broadly umbonate, at times the umbo obsolete, surface viscid beneath a covering of recurved fibrillose scales, glabrescent at times in age, the margin often fringed with veil remnants as a thin sheet or in patches, color a brilliant yellow ("picric yellow") over all including the veil remnants, at times "lemon chrome" to "deep chrome" or "raw sienna", disc at times tawny in age; ~~stipe~~ ^{Context} pliant, thick, yellow and with a greenish yellow line next to the gills; odor and taste perfectly mild.

Lamellae "picric yellow" staining dingy brown along the edges when rubbed, sharply adnexed, close to crowded, 3 tiers of lamellulae, moderately broad to broad in age, edges even.

Stipe (3) 5 - 10 (12) cm, long, (3) 5 - 10 mm, thick, equal or slightly enlarged at base, solid, stuffed to tubular, concolorous with pileus inside and out, darkening to cadmium yellow at base, covered up to the floccose-fibrillose annulus with a dense coating of recurved yellow scales from the ruptured veil, silky fibrillose above the annulus.

Spores 4 - 4.5 x 3 - 3.2 μ , short-ellipsoid, smooth, pale tawny in KOH; basidia 4-spored, 18 - 20 x 5 μ , yellowish to hyaline in KOH; pleurocystidia abundant, imbedded in the hymenium, 20 - 28 (32) x 7 - 11 μ , fusoid-ventricose with rounded to subcapitate apices to mucronate or broadly fusoid and obtuse at apex, some with highly refractive amorphous

Pholiota Kauffmaniana Smith, cont.

content (chrysocystidia); cheilocystidia similar to pleurocystidia or more contorted and clavate, orange-ochraceous in KOH; gill trama yellow in KOH, floccose, somewhat interwoven, subhymenial layers very indistinct and not gelatinous in KOH (at best only subgelatinous - i.e. slightly transparent); pileus trama yellow in KOH, floccose and interwoven beneath a thick +100 μ gelatinous pellicle of narrow (2 - 4 μ) pallid yellow smooth hyphae appressed but interwoven rather than radial; clamp connections present.

Habit, habitat and distribution: Cespitose to solitary on conifer logs and stumps, throughout northern regions, common in The Cascade and Olympic Mountains of Washington; late summer and fall. (Type).

Observations: When sections are first mounted in KOH they turn rusty orange. The pigment diffuses out into the mounting medium and breaks down to yellow. Later clusters of needle-like crystals form in the mount, especially on the gill trama. This fungus has been commonly called P. flammans in the United States. P. flammans should have a truly dry pileus.

Pholiota squarrosa⁰-adiposa Lange, Flora Agaricina Danica
5: 101. 1940.

Pholiota intermedia Lange, Flora Agar. Danica (not P.
intermedia Singer, 1928) 3: 55. 1938.

Pileus 3 - 9 cm/ broad, obtuse to convex when young, expanding to broadly convex to plane or with a low obtuse umbo, surface viscid (gelatinous in wet weather) covered at first with more or less scattered triangular to strap-shaped somewhat recurved scales; scales 3 - 4 mm/ long and 3 - 4 mm. wide at base, in age often spotlike and agglutinated, occasionally glabrescent (especially in wet weather); color of cap when young "russet" to "amber brown", soon becoming paler ("ochraceous tawny") and in age pale yellow ("antimony yellow" to "Naples yellow") over all except the disc; flesh thick, up to 1 cm/ in the disc, pliant, pale yellow to whitish, often with a green line just above the gills; odor none, taste none to slightly disagreeable.

Lamellae pale yellow ("cream buff") young, gradually becoming cinnamon to cinnamon-brown from the spores, bluntly adnate, becoming depressed-adnate, close, 48 - 54 reach the stipe, 3 - 4 tiers of lamellulae, narrow, becoming moderately broad in age (3 - 4 mm/ or finally 7 - 9 mm/), equal, edges even.

Stipe 4 - 8 (10) cm/ long, 8 - 18 mm/ thick at apex, equal or base flanged if attached directly on a hard surface, solid but becoming hollow, yellowish within ("massicot yellow") finally becoming "amber brown" at least in the base,

Pholiota squarros^a-adiposa Lange, cont.

occasionally fading to whitish in upper part, surface covered up to the apical fibrillose zone with appressed to recurved scales which are concolorous with those of the pileus, partial veil pale yellow becoming whitish, surface between scales pale yellowish but finally amber brown over lower part, silky and yellowish above; annulus submembranous or merely fibrillose.

Spores $5.5 - 6.5 \times 4 - 4.5 \mu$, elliptic in face view, subelliptic to obscurely bean-shaped in side view, smooth, tawny cinnamon in KOH, apical pore visible at ordinary magnifications; Basidia 4-spored, $20 - 23 \times 4 - 5 \mu$, four-spored, hyaline in KOH; Pleurocystidia inconspicuous or only slightly projecting, $(26 - 40 \times 10 - 12 \mu)$, obovate to mucronate; brown basidium-like bodies also present in hymenium; cheilocystidia $23 - 28 \times 5 - 7 \mu$, clavate to fusoid-ventricose with obtuse apices, hyaline, abundant but inconspicuous, in age elongating up to 45μ ; Gill trama with a central strand of subparallel hyphae flanked on either side by a gelatinous subhymenium; Pileus trama with a thick gelatinous pellicle, of hyphae $4 - 7 \mu$ in diam., cells of tramal body $10 - 15 (20) \mu$ diam.; Clamp connections present.

Habit, habitat and distribution: Cespitose, gregarious or solitary on standing and fallen dead trees, usually on hardwoods, common in the Pacific Northwest.

Observations:

X 16

Pholiota squarrosoides (Pk.) Saccardo, Syll. Fung. 5: 750. 1887.

Agaricus (*Pholiota*) *squarrosoides* Peck, Ann. Rep. N. Y.

State Mus. 31: 33. 1879.

Hypodendrum squarrosoides (Pk.) Overholts, North Am. Fl.

10: 278. 1932.

Pileus (2.5) 3 - 7 (11) cm/ broad, obtuse becoming broadly umbonate to convex, at times nearly plane, the margin often fringed with veil remnants, surface viscid beneath the scales; the scales dry, recurved to squarrose, scattered near the margin, often crowded over the disc, pale tawny ("tawny" to "ochraceous tawny"); ground color white to whitish fresh, becoming only slightly tinged with cinnamon in age or remaining whitish; ~~flesh~~ ^{cont. soft} thick, whitish, rather pliant; odor and taste not distinctive.

Lamellae close to crowded, adnate but becoming sharply adnexed, moderately broad (\pm 5 mm.), broadest at base and tapering toward the margin, whitish at first, slowly changing to dull rusty brown as spores mature, sometimes with brighter rusty stains.

Stipe (4) 5 - 10 (14) cm/ long, 5 - 10 (15) mm/ thick, equal, stuffed solid, fleshy-pliant, ^{two-thirds} lower $\frac{2}{3}$ covered by coarse, recurved, ochraceous tawny, persistent scales, tinged pale buff between the scales or with a tendency to stain rusty brown near the base, ground color typically pallid, apical region whitish and silky. ~~Annulus~~ ^{Annulus} superior and pallid, often more fibrillose than membranous, often evanescent.

Pholiota squarrosoides (Pk.) Saccardo, cont.

Spores dull rusty brown in mass, 4.5 - 5.5 (6) x 3 - 3.5 μ , smooth, elliptic in face view, subelliptic to obscurely bean-shaped in side view, pale dull cinnamon in KOH; basidia 4-spored, 17 - 20 x 4 - 5.5 μ , hyaline in KOH, narrowly clavate; pleurocystidia abundant, 26 - 45 x 7 - 12 (14) μ hyaline or with yellowish content in KOH, fusoid-ventricose to mucronate but content homogeneous, apices subacute, obtuse or more rarely subcapitate, imbedded in the hymenium or slightly projecting; cheilocystidia abundant, 15 - 20 x 9 - 12 μ , and saccate or only 6 - 9 μ wide and ventricose with obtuse apices, some merely clavate to sub-cylindric, usually hyaline; gill trama with a central strand of parallel hyphae flanked on either side by a broad gelatinous subhymenium; pileus trama with a gelatinous pellicle of hyphae 3 - 7 μ in diam.; flesh proper of hyphae 10 - 15 μ in diam., some lactifers present; clamp connections present.

Habit, habitat and distribution: Cespitose on hardwood, particularly soft maple, birch, beech and basswood, or in the Northwest on alder. It sometimes occurs on the living trees. Common during the late summer and fall.

Observations:

Pholiota terrestris Overholte, Noth.Amer.Fl. 10:268. 1924.

Pileus (1)2-8(10) cm/ broad, when young obtusely conic to convex, soon obtusely umbonate, at maturity expanded and with a slight umbo, at times nearly plane, usually covered with numerous fibrillose scales, or toward the margin merely fibrillose streaked, ~~a gelatinous layer~~ present beneath the scales and the latter consequently becoming rather readily weathered away, scales or fibrils "wood brown" along the margin, near "Verona brown" on the disc, when young evenly "warm sepia" because of the fibrillose covering, at times "Prout's brown" to "cinnamon brown" when freshly matured, margin usually fibrillose-appendiculate. ~~Flesh~~ ^{Gutted} rather thick (\pm 4 mm), watery buff to brown, pliant and subcartilaginous; odor and taste mild.

Lamellae narrow, crowded, adnate, pallid becoming pale avellaneous and finally sometimes faintly tinged "Isabella color" pale cinnamon when dried, edges slightly uneven.

Stipe 3-8(10) cm/ long, (2)5-10 mm/ thick, equal or narrowed below, solid but soon hollowed, flesh grayish but with a strong tendency to stain yellow to brownish at base or around worm holes, occasionally staining where bruised or handled, surface covered to a superior annular zone or ring by dark avellaneous recurved scales, scales larger and more numerous upward, sheath at times merely becoming broken into zones or patches instead of scales, apical region fibrillose prunose.

Spores 5-6.5 \times 3.5-4 μ , elliptic in face view, obscurely bean-shaped in side view, smooth, with a very minutely apical pore, dull "verona brown" in deposits, pallid brownish in KOH;

Pholiota terrestris Cont.

basidia 4-spored, $20-22 \times 5-6 \mu$, hyaline in KOH; pleurocystidia scattered and inconspicuous, $25-34 \times 7-10 \mu$, mucronate to fusoid-ventricose with acute apices, with a highly refractive amorphous body in interior as revived in KOH (hence chrysocystidia) and the head $4-6 \mu$ in diam; content homogeneous; gill trama with a hyaline central floccose strand flanked by gelatinous subhymenial tissue; pileus trama with a gelatinous pellicle between fibrils and scales of the surface and the homogeneous flesh below; clamps present.

Habit, habitat and distribution: Densely caespitose along roads in the fall, throughout the Pacific Northwest, common during warm wet seasons.

Observations:

Pholiota squarrosa (Fries) Quélet, Champ. Jura et Vosges, p. 126.
1872.

Agaricus squarrosus Fries, Syst. Myc., 1:243. 1821.

Dryophila squarrosa Quélet, Enchir. Fung., p. 68. 1886.

Pileus 3-10(12) cm/ broad, obtuse to convex when young, the margin incurved, becoming campanulate with a conic umbo to broadly convex or nearly plane, surface dry, cuticle broken up into numerous innate, recurved, or squarrose scales, the margin at first^s conspicuously fringed with veil remnants, cuticle sometimes denuded along the edge leaving a glabrous margin, scales "cinnamon buff" to "clay color" and becoming dull tawny at maturity (light to dark yellowish brown), pale yellow between the scales, or in age pale greenish yellow along the margin; ^{Interp} flesh moderately thick and pliant, pale yellowish; odor none, ~~taste mild or slightly~~

^{51814, 51911;}
~~rancid~~ (of garlic in Sm-35993, 50928; of onion¹ Sm-51425, 51602, 52961),
~~taste mild or slightly rancid.~~

Lamellae bluntly adnate to somewhat arcuate and with a decurrent line or tooth, close to crowded, narrow, pale yellowish when young, soon more or less sordid greenish yellow ("Isabella color"), and finally sordid rusty brown, edges even.

Stipe 4-10(12) cm/ long, 4-12(15) mm/ thick, equal or nearly so, at times tapered to a long strigose pointed base, solid, yellowish within, surface covered with recurved pale tawny scales up to the annular zone, annulus often evanescent but sometimes membranous and persistent (and then margin of cap not conspicuously appendiculate).

Spores ellipsoid in face view, slightly bean shaped in side view, ^(5.5)_^ 6.5-8 μ 3.5-4.5 μ , smooth, dull brown in KOH; basidia four-spored, 20-24 \times 5-6 μ ; pleurocystidia scattered to abundant.

Pholiota squarrosa. Cont.

mostly imbedded in the hymenium, $30-42 \times 8-12 \mu$, arising in subhymenium, mucronate to obovoid, the more or less fusoid ventricose but with the neck not greatly elongated (only $6-10 \mu$ long) content usually in the of large or small highly refractive amorphous granules (as in species of Naematoloma, some remaining dark cinnamon brown when revived in KOH; gill trama of parallel pale yellowish hyphae $6-8 \mu$ in diam., subhymenium gelatinous, hyaline, $15-18 \mu$ in diam. in revived mounts; pileus trama homogeneous, cuticle differentiated as a layer of pale tawny nongelatinous hyphae of the same diam. as the remainder of the flesh, the tawny fibrils grouped into fascicles to form the scales, no clamp connections seen.

PHOLIOTA

SECTION ALBIVELA

One species, 19. P. albivelata

Pholiota albivelata Murrill, Mycologia, 4: 260. 1912.

Pileus (2) 4 - 8 cm, broad, obtuse to broadly convex when young, the margin incurved, expanding to broadly convex or at times remaining slightly umbonate, ~~surface~~ ^{from} glabrous and viscid, smooth or somewhat papillate to rugulose ~~caused by~~ wrinkling of the gelatinous pellicle, dark vinaceous brown to pale vinaceous brown ("army brown" to "fawn color", the margin paler) and somewhat similar in color to some species of Gomphidius; ~~from~~ ^{Context} thick in the disc, tapered evenly to the margin, white or whitish, rather soft but pliant; odor fungoid, taste mild.

Lamellae bluntly adnate, with a decurrent tooth, or slightly depressed around the stipe, close, moderately broad, white but becoming dark avellaneous at maturity ("wood brown"), edges even, ^{or white-fimbriate.}

Stipe 5 - 9 (10) cm, long, 8 - 10 mm, thick, equal, hollow, with a more or less median, broad, membranous, white, persistent annulus that is distinctly striate on upper surface and white floccose beneath, above the annulus white and appressed fibrillose, ~~with~~ ^{to} and rather conspicuously scurfy below the annulus but nearly glabrous at the base, at times the lower portion somewhat discolored, base usually furnished with numerous white rhizomorphs.

Spores dark "cinnamon brown" in mass and under the microscope when fresh or when revived in KOH, 7 - 9 x 4 - ^{5.5} ~~8~~ p,

Pholiota albivelata Murrill, cont.

ellipsoid or nearly so, smooth, apical pore present but very inconspicuous and hence apex not appearing truncate; basidia four-spored, $27 - 34 \times 6 - 8 \mu$, hyaline in KOH, projecting when sporulating; ~~Pleurocystidia~~ ^{abundant} ~~but best viewed in~~ ~~mounts revived in KOH,~~ $28 - 36 \times 5 - 12 \mu$, mucronate, the apex pointed and enlarged portion with a highly refractive amorphous irregular mass; cheilocystidia ~~the usual~~ ^{ventricose type but varying to} subcylindric, $30 - 36 \times 6 - 9 \mu$, hyaline and with homogeneous content; Gill trama homogeneous and more or less interwoven, subhymenium not distinctive; ^{internerven,} Pileus trama homogeneous, beneath a thick hyaline gelatinous pellicle of narrow hyphae. Clamp connections present. Caulocystidia ^{none}

Habit, habitat and distribution: Solitary to scattered, under conifers, Washington, Oregon and northern California.

Observations: In some respects this species is close to Stropharia but the spores are not the right color and many species of Pholiota have chrysocystidia.

PHOLIOTA

SECTION PSEUDO-HEBELOMA

1. Lignicolous; spores almost broadly fusoid
in face view, $12 - 15 \times 5.5 - 6.5 \mu$. . . ²⁰~~18~~. P. albocrenulata
1. Terrestrial; spores elliptic to oblong
in face view 2
2. Odor like that of chestnut flowers ¹⁹~~19~~. P. sericipes
2. Odor none 3
3. Spores $9 - 12 \times 5 - 6.5 \mu$ ²²~~20~~. P. californica
3. Spores $8 - 10 \times 4.5 - 5 \mu$ ²⁴~~22~~. P. kalmicola

Pholiota albocrenulata (Pk.) Saccardo, *Syll. Fung.* 5: 760. 1887.

Agaricus albocrenulatus ^(Pk.) ~~Peck~~, ^{Buffalo} *Soc. Nat. Sci.* 1: 49. 1873.

Hypodendrum albocrenulatum (Pk.) Overholts, ^{North Amer. Flora} *N.A.F.* 10:

281. 1932.

Hebeloma albocrenulata (Pk.) Singer, *Rev. Mycologie*, n. 5. 4: 72
1939.

Pileus (2.5) 3 - 8 (12) cm. broad, obtuse to broadly conic or convex, expanding to obtusely umbonate or nearly plane, surface glutinous to viscid, shining when dry, orange-fulvous to deep ferruginous and finally dark vinaceous brown (near "Rood's brown"), decorated with superficial brown or ^{blackish} fibrillose scales from remains of a veil, veil particles ^{scales sometimes disappearing} pallid on drying out, margin opaque and often decorated with veil remnants; ^{Context} ~~fresh~~ thick, pallid; odor not distinctive, taste not recorded. (more rarely "lilac-gray")

Lamellae adnate to subdecurrent or sinuate and ^{by a tooth,} ~~teeth~~ ^{broad or} decurrent, at times rounded next to the stipe, close, very broad, whitish becoming grayish and at length rusty-umber, edges crenulate and beaded with "white drops" (25) — Kauff.

Stipe 3 - 10 (15) cm. long, 5 - 15 mm. thick, equal or nearly so, fibrous and firm, stuffed becoming hollow, pallid to grayish above, ^{fungaceous} dark brown below, surface covered to the broken annulus with squarrose brown scales of veil tissue, apex pruinose;

Spores 12 - 15 x 5.5 - 6.5 μ , inequilateral in side view, almost broadly fusoid in face view, with an apical hyaline

Pholiota albocrenulata (Pk.) Saccardo, cont.

callus (pore distinct) smooth, very thick-walled, dark cinnamon in KOH; basidia 4-spored, $30 - 36 \times 8 - 9 \mu$, hyaline in KOH; pleurocystidia none; cheilocystidia abundant, elongate-clavate, $40 - 70 \times 6 - 10 \mu$, hyaline or content yellow as revived in KOH; gill trama with a floccose central strand of \pm parallel hyphae flanked by gelatinous subhymenial tissue (in KOH - layer not evident in all sections); pileus trama floccose and homogeneous and merely dingy yellowish in KOH beneath the thick gelatinous pellicle of appressed yellowish hyphae; clamp connections present.

Habit, habitat and distribution: Single or in groups of 2 - 3, often from knot holes in standing hardwood trees or from other injured places, at times on recently fallen material (trunks and large branches); summer and fall, Sm-38028, Tahquamenon Falls State Park, Michigan.

Observations: The apex of the spore recalls the condition found in Agrocybe erebia, but this is hardly sufficient reason for transferring it there inasmuch as the other characters do not show any similarity to the erebia group. There apparently is a layer of colored hyphae below the gelatinous pellicle. See ^{Smith's} ~~my~~ card: 33-789.

Card found, but not the specimen

Substitute
my notes -
attached

omit

Copy

Pholiota sericipes (Earle), comb. nov. —

Hebeloma sericipes Earle, Bull. N. Y. Bot. Gard. 2:

342. 1902,

Pileus 4 - 6 cm, broad, obtuse to broadly convex, expanding to plane or slightly depressed, surface glabrous on disc, pale olive brown, dry, margin silky-fibrillose, entire, ^{contact} flesh white, unchanging; taste mild ^{and} pleasant, odor like that of chestnut flowers.

Lamellae sinuate, crowded, subnarrow, nearly plane, white to ochraceous-brown, the edges white, erose.

Stipe 4 - 6 cm, long, 7 - 9 mm, thick, equal, subglabrate at the base, the upper half conspicuously silky-fibrillose, white, solid, crisp; Veil universal, white, arachnoid.

Spores 8 - 11 x ^{5.5 - 7.5 μ} ~~5 - 6 x 6 - 7 μ~~, broadly ellipsoid in face view, elliptic ^{and} to obscurely bean-shaped in ^{profile} ~~side~~ view, smooth, pale buckthorn brown in KOH, no apical pore visible;

Basidia ³⁰ ~~34~~ - 40 x 9 - 12 μ, ^{4-spored} clavate, hyaline in KOH;

Pleurocystidia none; cheilocystidia ³⁰ ~~36~~ - 45 x ¹⁸ ~~10~~ - 18 μ, ~~ventricose~~

clavate or a few fusoid-ventricose, thin-walled and readily

collapsing, hyaline in KOH; Gill trama ^{subparallel, hyphae 3.5 μ} ~~apparently inter-~~

^{broad;} ~~weaver~~, no gelatinous subhymenium ^{not distinctive.} ~~seen (poorly revived);~~

^{interwoven,} Pileus trama of floccose-filamentose hyphae; Cuticle of

appressed nongelatinous hyaline hyphae, 3 - 6 μ ^{broad.} ~~in diam.~~

Clamp connections present. Pileus and gill trama brownish

in KOH, reddish brown in Melzer's reagent.

Caulocystidia rare, clavate, 50-70 x 7-10 μ, clavate, rare.

omit

(Pholiota sericipes (Earle), comb. nov., cont.

Habit, ~~Habitat~~ and Distribution - Solitary among oak leaves, ~~Stanford~~, California.

Observations: The spores are more typical of Pholiota than any other genus. The cuticle is not at all typical of Hebeloma ^{not} and ~~neither~~ are the cheilocystidia. Hence, ^{it seems to be that} ~~I believe that~~ a better expression of relationship is ^{achieved} ~~attained~~ by placing the species in Pholiota. ~~As~~ ^{The} dried ~~the~~ cap is near cinnamon buff, and a rim of veil fibrils surrounds the upper edge of the enlarged base of the stipe.

Material Studied - California: Earle (type, from Stanford).

Pholiota californica (Murrill) ^{comb. nov.} ^{North Amer. Flora} →

← Hebeloma californicum Murrill, ^{N.A.F.} 10: 225. 1917.

Pileus 7 - 9 cm, broad, thick, ~~fleshy~~, irregular, convex to subexpanded, broadly umbonate, glabrous, grayish-white to cream-colored, ^{dry}, smooth on the disc, striate and cracked toward the margin which is entire to undulate or lobed, concolorous, ornamented with the remains of a slight arachnoid veil; ^{cuticle} ~~flesh~~ rather thin, white.

Lamellulae sinuate, very broad, subcrowded, white, becoming yellowish and finally yellowish brown,

Stipe 5 - 10 cm, long, 1.5 - 3 cm, thick, equal or tapering upward, shining-white or grayish, solid, ornamented with coarse fibrils, often split or cracked.

Spores 9 - 12 (17) x 5.5 - 6.5 (7) μ , ellipsoids to oblong in face view, obscurely bean-shaped to elliptic in ^{acid} ~~side~~ ^{acid} ~~profile~~ view, not appreciably compressed, ochraceous tawny in KOH, smooth, thick-walled, ~~no~~ apical pore visible; Basidia 4-spored, ^{very large,} ~~(possibly some 2-spored)~~, 40 - 46 x 10 - 14 μ , clavate, yellow in KOH; Pleurocystidia none; cheilocystidia 45 - 65 x 11 - 22 μ , clavate to submucronate, yellow in KOH but thin-walled and readily collapsing; Gill trama subparallel, yellow in KOH; Pileus trama floccose-interwoven beneath a cuticle of narrow non-gelatinous hyphae; Clamp connections present.

Habit, habitat and distribution: ^{On} ~~In~~ clay soil, near oak trees, ~~Jasper Ridge, Stanford University, California,~~ March, 26, 1916. ~~McMurphy 218 (Type).~~

Observations: The stature of this species seems too robust for an Inocybe, but the spores and cheilocystidia indicate this rather than Pholiota. However, include it in ~~your~~ Pholiota MS, and also send the data to Stuntz.

(I examined the type, but it was ~~so~~ badly pulverized and entirely unfit for study. (F.R.H.)) The type material is not in best condition for study. It seem to be known only from the type collection.

Material Studied - California: Mc Murphy 218

(type, on soil, near oak trees, Stanford University, Jasper Ridge, March 26, 1916, on deposit at the N.Y. Botanical Garden Herbarium).

PHOLIOTA
SECTION PHOLIOTOIDES
KEY TO SPECIES

1. Spores 6 ~~x~~ 7.5 x 4 - 4.5 μ ; annulus cottony and
striate on upper side ²¹ P. Sm-13260
1. Spores larger; annulus seldom striate
above 2
2. Stipe (2) 5 - 7 cm. thick at base, 1 - 3
cm. at apex; veil heavy and cottony, leaving
copious remains on pileus and stipe
. ²² P. destruens
2. Stipe 2 - 6 mm. thick at apex and veil
not as above 3
3. Pileus appressed fibrillose-squamulose; spores
8 - 10 x 5 - 5.5 μ ; stipe squamulose ²³ P. Sm-37424
(terrigena?)
3. Not as above 4
4. Cheilocystidia 26 - 34 x 5 - 8 μ ²⁴ P. Sm-28218
4. Cheilocystidia 40 - 60 μ long 5
5. Pileus dark olive brown fresh; flesh very
soft ²⁵ P. mutans sp. nov.
(Sm-6205)
5. Pileus watery cinnamon; flesh fairly
firm ²⁶ P. discolor

My coll. have
pl. of
my det. correct
discolor belongs in
P. Hamula

Pholiota *populicola* Sm-13260.

Photo.
(not found)

Pileus 1.5-3.5(4) cm/ broad, convex becoming plane, viscid when young, ^{at first} glabrous, "argus brown" over all, ~~at first~~, becoming "ochraceous tawny" on the margin and striatulate, fading to "light buff" and finally dingy tawny; ^{Context} flesh thin, concolorous with surface; odor and taste not distinctive.

Lamellae crowded, +30 reach the stipe, narrow (3-4 mm), depressed adnate and soon ^sreceding, 2-3 tiers of lamellulae, pallid ("tilleul buff"), becoming "ochraceous tawny", edges very thin, ~~and~~ even to slightly crenulate.

Stipe 7-9 cm/ long, 3-4 mm/ thick, tubular equal or slightly enlarged downward, whitish above, becoming "Dresden brown" from the base upward, at first densely fibrillose with a pale buff fibrillose coating, fibrillose-squamulose above the annulus, generally glabrescent; ^a annulus thick, superior, pallid striate above, cottony and at times darker below, often evanescent.

Spores ⁽⁵⁾⁶ 6.6-7.5 x 4.4.5 μ , obscurely inequilateral in side view, ovate in face view, apical pore present (spore apex obscurely truncate), smooth, tawny in KOH; basidia 4-spored, 18-22 x 506 μ , hyaline to yellowish in KOH; pleurocystidia none; cheilocystidia scattered and inconspicuous, ventricose-subcapitate, 18-26 x 5-8 μ , head 4-6 μ , hyaline, thin-walled; gill trama parallel or nearly so, ochraceous in KOH, subhymenium not distinctive; pileus trama floccose-interwoven and hyaline to yellowish, no colored hypoderm present between it and the gelatinous hyaline pellicle of appressed, interwoven narrow

Pholiota Sm-13260. Cont.

(2-3 μ) hyphae; clamp connections present.

Habit, habitat and distribution: Gregarious on old rotten hardwood logs (populus, alnus & acer), Clearwater River, Olympic Peninsula, Washington, May 9, 1939, Sm-13260.

Observations: This species is distinct because of the lack of a colored hypoderm, lack of gelatinous subhymenial tissue, and the presence of a cottony, striate annulus, smooth inequilateral spores, and darkening stipe.

X

BrondcauPholiota destruens Brond, Plant Crypt. de l'Agen. pl. 6.

1828-30.

Pileus (6) 8 - 16 (20) cm/ broad, convex when young, expanding to broadly convex, rarely umbonate, ~~surface~~ viscid, pallid to whitish, or gradually darkening on the disc through avellaneous to wood brown or darker in age ^{and} when wet, ~~surface~~ conspicuously decorated with the remains of a copious veil in the form of floccose scales or patches which may become matted down in age or be washed off entirely, margin shaggy from the copious veil remnants, ^{which are} ~~veil remnants~~ pallid or finally dingy buff; ^{Context} ~~flesh~~ thick, firm, white; odor not distinctive (usually fungoid), taste slightly disagreeable but hardly distinctive.

Lamellae broad, close, adnate to sinuate, white when young but gradually becoming deep rusty cinnamon, edges even.

Stipe central to eccentric, 5 - 12 (18) cm/ long, 1 - 3 cm/ thick at apex, (2) 5 - 7 cm/ thick at base, clavate to equal, hard, solid, white at first, brownish at least below in age (especially if water-soaked), copiously decorated with the remains of the thick, white, floccose veil as scales or patches up to the floccose-cottony evanescent annul^ys, silky above.

Spores 7 - 9 x 5 - 6 μ , ellipsoid, smooth, ochraceous tawny in KOH, apical pore minute; basidia 4-spored, 26 - 30 x 7 - 8 μ , hyaline in KOH; pleurocystidia none;

Pholiota destruens Brand, cont.

cheilocystidia inconspicuous, 18 - 32 x 5 - 8 μ , variable in shape, clavate, filamentose, narrowly fusoid-ventricose or variously contorted, content of some yellowish in KOH, smooth, thin-walled; gill trama parallel or nearly so, subhymenium not distinctive (not gelatinous); pileus trama homogenous and floccose-filamentous beneath a poorly differentiated pellicle of somewhat gelatinous hyphae (no hypoderm), all parts hyaline in KOH; clamp connections present.

Habit, habitat and distribution: Solitary to sub-cespitose on hardwoods across the United States. From my experience it is most abundant in dry regions on the willow and cottonwoods which grow along streams. The best fruiting I have seen was on cottonwood along the John Day River in Oregon in late November.

Observations: The heavy, fleshy pileus, the copious, cottony-floccose veil, the deep rusty cinnamon gills at maturity and lack of pleurocystidia and a gelatinous subhymenium, are distinctive. The pileus will frequently be doubtfully viscid beneath the squamules.

sola
 Pholiota Sm-37424 (~~terrigena?~~)

Pileus 2 - 3 cm, broad, obtuse with an incurved margin, expanding to obtusely umbonate, or nearly plane and the umbo obsolete, surface appressed fibrillose-squamulose, the scales most distinct along the margin, ground color between avellaneous and cinnamon buff, squamules and fibrils "tawny olive" to "cinnamon brown"; ^{Context} flesh near "Saccardo's umber", fading; taste and odor none.

Lamellae decurrent, close, moderately broad, "cream buff" (yellowish) young, finally earth-brown from the spores.

Stipe 6 - 8 cm, long, 7 - 8 mm, thick, equal, tubular, dingy pale olive-yellowish inside, exterior near apex yellowish (paler than gills) yellow less evident toward the base, covered to the apical annular zone with scattered tawny olive squamules concolorous with pileus over all except the apex.

Spores 8 - 10 x 5 - 5.5 μ , elliptic in face view, obscurely inequilateral to obscurely bean-shaped in side view, smooth, tawny in KOH, apical pore not visible; Basidia 33 - 36 x 6 - 7.5 (8) μ , 4-spored, hyaline to yellowish in KOH; ^(see Heiler's notes) Pleurocystidia none found in revived material; cheilocystidia variable in size and shape, 20 - 40 x 7 - 10 μ , clavate to elongate or variously contorted, often with ochraceous, slightly thickened walls as revived in KOH; Gill trama sub-parallel to interwoven, ochraceous to pale fulvous (near gill

Pholiota Sm-37424 (terrigena?), cont.

edge) in KOH; subhymenium not differentiated; ^Pileus trama floccose-interwoven and progressively darker (in KOH) toward the surface. ^Cuticular region of rusty brown hyphae, with encrusted pigment projecting in fascicles, the cells 6 - 12 μ in diam., and mostly equal in width; ^Clamp connections present.

Habit, habitat and distribution: Three together on humus, Tahquamenon Falls State Park, Michigan, August 6, 1951, Harry Thiers (Sm-37424).

Observations: I thought I found chrysocystidial cells as pleurocystidia on fresh material, but they did not show up at all in revived mounts - where they should have been easy to locate. Hence I now doubt their presence.

Spec. not found

Pholiota Sm-28218.

Pileus 1-4 cm/ broad, obtuse to convex, expanding to broadly convex or plane, surface glabrous, viscid to glutinous (pellicle well-developed and separable), ~~color~~ orange brown to tawny or, toward margin, more ochraceous; odor and taste not recorded.

Lamellae short decurrent, close, broad, ochraceous tawny.

Stipe 3-5 cm/ long, 2-6 mm/ at apex, somewhat enlarged downward, faintly silky-pruinose above the superior submembranous, + evanescent annulus, and dull ochraceous below the annulus progressively darker brown toward the base and coated with the variously disposed appressed pallid fibrils from the veil (not scaly or squamulose), base with white rhizomorphs.

Spores 7-9 x 4-5 μ , smooth, ochraceous tawny in KOH, thick-walled, apical pore minute, + ellipsoid; Basidia four-spored, 20-24 x 7-8 μ ; Pleurocystidia none; cheilocystidia abundant, narrowly ventricose-subcapitate, 26-34 x 5-8 x + 3 μ , hyaline, thin-walled; Gill trama ochraceous in KOH, parallel; the subhymenium thin but hyaline and subgelatinous (in KOH); Pileus trama homogeneous beneath a thick gelatinous pellicle of narrow + hyaline hyphae. Hyphae of tramal body ochraceous orange (in KOH) from incrustated pigment; Clamp connections present.

Habit, habitat and distribution: caespitose in clearing for a highway, on humus, Beaver Creek, Mt. Hood National Forest, Ore., Oct. 24, 1947. Sm-28218.

Observations; I misidentified this in the field as *Galerina discolor* (sensu Overholts).

X

Pholiota mutans sp. nov. (Sm. 6205) →

Photo

Pileus 1 - 3 cm, broad, convex, becoming plane or with a slightly turned-up margin in age, viscid to the touch, glabrous except for a ^{lightly} ~~faint~~ fibrillose marginal zone, edge often with floccose flecks of veil tissue, color "clove brown" to "olive brown" at first (olive brown) becoming "pale olive buff" on margin, subhygrophanous, fading to "clay color" or "Saccardo's umber" (ochraceous), disc often "Isabella color" for a time, opaque at first, but becoming striate before fading; ^{contact} ~~flesh~~ watery and soft, pale brownish umber, becoming ochraceous; odor earthy, taste mild.

Lamellae close (25 - 30 reach stipe), 3 tiers of lamellulae, broadly adnate-decurrent, moderately broad, (broadest at base), a few forked ^{behind,} ~~near the base~~, pallid to whitish at first, dull ochraceous tawny in age, edges even but becoming minutely white crenulate.

Stipe 2.5 - 4 cm, long, 2 - 3.5 mm, thick, fleshy-watery, hollow, equal or slightly enlarged below, white mycelioid at base, sparsely fibrillose up to the well-formed submembranous annulus, white and silky pruinose above and below annulus.

Spores 7 - 9 x 4 - 5 μ , smooth, pale yellow in KOH, elliptic to subelliptic in face view, slightly inequilateral in side view, apical pore scarcely visible under oil immersion; basidia four-spored, hyaline in KOH; pleurocystidia none;

Pholiota mutans sp. nov. (Sm. 6205), cont.

cheilocystidia scattered to abundant, $40 - 62 \times 7 - 10 \mu$, subcylindric to flexuous and apices obtuse, a few somewhat ventricose toward base, hyaline in KOH, often with clamp-connection at cross-wall; gill trama parallel and hyaline; pileus trama with thin layer of gelatinous hyphae $2 - 3 \mu$ in diam., flesh proper hyaline in KOH and of hyphae $6 - 12 \mu$ diam.

Habit, habitat and distribution: Scattered on material composing brush piles, mostly limbs of Telia glabra.

May 23, 1937. Helen and A. H. Smith 6205.

Discussion: This is a rather anomalous fungus but is apparently better placed here than in *Tubaria*. In aspect it is more like Agrocybe than any other genus but lacks all the diagnostic characters of that genus.

Agaricus (Pholiota) discolor Peck Bull. Soc.Nat.Sci.Buff. 1:50.
1873.

"Pileus thin, convex, then expanded or slightly depressed, smooth, viscid, hygrophanous, watery-cinnamon and striatulate on the margin when moist, bright ochraceous yellow when dry; lamellae close, narrow, pallid, then pale ferruginous; stem equal, hollow, fibrillose-striate, pallid; annulus distinct, persistent; spores elliptical, .00028' x .0002'.

"Plant subcespitose, 2'-3' high, pileus 8"-16" broad, stem 1" thick.

"Old logs in woods. Greig. September.

"The change in color when passing from the moist to the dry state is very marked."

Microscopic characters of Type (Greig, September). Pileus trama homogeneous, sordid yellowish and hyphae compactly interwoven in KOH, 5-7 μ diam.; cuticle of loosely arranged nearly hyaline nongelatinous hyphae 7-10 μ diam., clamp connections abundant; gill trama (in KOH) composed of narrow yellowish hyphae; pleurocystidia none; cheilocystidia abundant, ventricose to subfilamentose, some subcapitate, 46-62 x 7-10(12) μ , walls often flexuous in age; spores 7-9 x 4-5 μ , smooth, ellipsoid, very pale yellowish in KOH.

Observations: This is ^{Tubaria} ~~Glaveoto~~ ~~ubaria~~ ^{close to Tubaria} but apparently distinct and more properly placed in Pholiota or possibly Naucoria.

PHOLIOTA

SECTION CYATHICOLAE

1. Stipe 3 - 10 mm. thick; pileus 3 - 12 cm.
broad; with a thick cottony median annulus
. ²⁹ ~~27~~. P. cubensis Earle
1. Stipe 1.5 - 2 mm. thick; pileus 7 - 15 mm. broad;
veil fibrillose and not leaving an annulus 2
2. Lamellae distant, squarely adnate
. ³⁰ ~~28~~. P. cyathicola
2. Lamellae close, decurrent . . . ³¹ ~~29~~. P. (Burke I.)

Em-68731

X

Pholiota cubensis Earle. Inf. An. Estac. Centr. Agron. Cuba
1: 242. 1906.

Pileus 3 - 12 cm. broad, fleshy, firm, expanded, dark tan ("tawny" or "cinnamon brown" in herbarium specimens), dry, floccose-scaly on the disc, areolate but not striate on the margin, context yellowish, taste somewhat unpleasant.

Lamellae sinuate with an adnate tooth, crowded, 3 - 7 mm. broad, dark cinnamon.

Stipe 3 - 6 cm. long, 3 - 10 mm. thick, central, terete, solid, firm, slightly enlarged at the base, floccose above, glabrous below; with a rather thick cottony median annulus; base with white rhizomorphs.

Spores 6 - 7 × 3.5 - 4.5 μ , ventricose at base to ovate, obscurely bean-shaped to somewhat inequilateral in side view, near "cinnamon brown" in KOH, apical pore small but visible under ordinary magnifications; basidia 4-spored, 16 - 18 × 6 - 7 μ , sections of hymenium yellow; pleurocystidia abundant, 30 - 40 × 9 - 14 μ , ventricose to oval with an apical prolongation or clavate-mucronate, content homogeneous or some with a refractive amorphous mass (chrysocystidia); cheilocystidia similar to pleurocystidia; gill trama interwoven, ochraceous in KOH, subhymenium not distinctive; pileus trama homogeneous and floccose beneath a cuticle of interwoven hyphae, yellow to dingy ochraceous in KOH and some with thickened walls, not gelatinous; clamp connections not found but hyphae revivified poorly and were very broad.

Pholiota cubensis Earle, cont.

Habit, habitat and distribution: Scattered to gregarious on the ground in fields and under buildings, Cuba and Grenada.

Observations: The aspect is that of an Agrocybe but none of the essential characters substantiate such a disposition of the species.

Pholiota cyathicola (Murr.) comb. nov.

Naucoria cyathicola Murrill, Mycologia 4: 77. 1912.

Pileus 7 - 12 mm. broad, hemispheric-umbonate, surface isabelline, pale-fulvous on the umbo, innate-fibrillose, margin entire, not striate.

Lamellae distant, squarely adnate, whitish to pale-ochraceous.

Stipe 2 cm. long, 1.5 mm. thick, subequal, cylindric, fibrillose, isabelline, cartilaginous; veil not evident, except as fibrils on pileus and stipe.

Spores 6 - 7 x 3.5 - 4 μ , smooth, thick-walled, buckthorn brown in KOH (*Pholiota malicola* type but small); basidia 4-spored, 14 - 18 x 5 - 5.5 μ , hyaline in KOH; cheilocystidia 30 - 45 x 9 - 12 μ , golden-ochraceous, fusoid-ventricose, smooth, some \pm subclavate, content and wall colored; pleurocystidia 42 - 65 x 9 - 13 μ , fusoid-ventricose with obtuse apices, content often colored ochraceous - as in *Flammula* section - with a protoplasmic plug, thin-walled, smooth; gill trama with a \pm parallel central strand flanked by a gelatinous thick subhymenial layer on each side; pileus trama homogeneous (no pellicle found in material studied); clamp connections present.

Habit, habitat and distribution: On dead trunks of tree-ferns, Morce's G_ap, near Cinchona, Jamaica.

Observations: See my study card for Dennis' comment and mine.

condensata (?) X
Pholiota [Burke genus unknown (I)] - Smith - 68731 ?

Pileus 10 - 15 mm, broad, obtuse when young, expanding to plano-umbonate or margin remaining decurved, ~~surface~~ moist and hygrophanous, "Sayal brown" near margin, disc "Mikado brown", scarcely changing color in fading, surface unpolished to faintly squamulose with pinpoint reddish squamules; ^{Guttes} ~~flesh~~ almost pure white faded, Sayal brown moist, taste mild.

Lamellae close, (\pm 27 reach stipe), decurrent, narrow, not forked, pale yellow (between "warm buff" and "Antimony yellow"), edges subdentate.

Stipe 2 - 3 cm, long, 1.5 - 2 mm, thick, equal above a small rounded-bulbous base, solid, dry, flexuous, hollow, the hollow containing loose arachnoid fibrils, glabrous or with a few appressed fibrils, ridged-striate, pale yellow ("cream buff"), bulb covered with pallid mycelium.

Spores 6.5 - 8 (8.5) \times 4.5 - 5.5 μ , ovate in face view, subelliptic to obscurely bean-shaped in side view, smooth, thick-walled, no apical pore visible, ochraceous tawny in KOH; Basidia 4-spored, 18 - 20 \times 6 - 7 μ , hyaline in KOH; ~~pleurocystidia~~ pleurocystidia abundant, fusoid-ventricose 36 - 44 \times 9 - 14 μ , apices obtuse, hyaline to yellowish in KOH, smooth; cheilocystidia similar to pleurocystidia but more often collapsed and with yellow content or with colored material lodged against the wall; ~~Gill~~ trama hyaline

Pholiota, cont.

in KOH, ^{an} ~~en~~ interwoven central strand, flanked on either side by well-developed gelatinous subhymenial layers; Pileus trama perfectly hyaline, ~~and~~ floccose interwoven up to a cuticle of matted down rusty brown hyphae with incrustated to spiral-pigment bands, the hyphae 4 - 8 μ thick and not gelatinous; Clamp connections present.

Habit, habitat and distribution: Solitary on humus, Robinson Springs, Alabama, Sept. 13, 1942. R. P. Burke.

Observations: In gill trama, cystidia and spores, this is a typical Pholiota. The cuticle of rusty brown hyphae and omphalia-like stature are curious.

Naucoria corticola Murrill, Mycologia 4: 77. 1912.

Pileus 1 - 1.5 cm. broad, ~~thin~~, convex to subexpanded, surface avellaneous, isabelline^{dry}, innate-fibrillose with slight tufts (resembling Panus stipticus), margin undulate, incurved when young. *Context thin.*

Lamellae adnate, dull whitish to bay-fulvous, broad, heterophyllus, rather distant.

Stipe 1 cm. long, \pm 1 mm. thick, ^{yellow}, cylindric, equal, ~~yellow~~, glabrous at apex, whitish-pubescent below.

Spores 7 - 8.5 x 4.5 - 5.5 μ , ovate in face view, elliptic in side view, smooth, thick-walled, with a small apical callus, rather dark tawny in KOH; basidia 4-spored, 18 - 22 x 7 - 8 μ , hyaline to yellowish in KOH; pleurocystidia abundant, very peculiar, 50 - 70 x 10 - 16 μ , pedicellate with a narrow hyaline pedicel, ventricose and thin-walled above (hyaline in this portion on reviving poorly), neck cylindric with apex obtuse and apparently a cross wall separating the neck from the ventricose portion, content of neck ochraceous in KOH; cheilocystidia similar to pleurocystidia but smaller; gill trama hyaline, more or less interwoven, flanked on either side by a broad band of gelatinous subhymenium; pileus trama with a floccose outicular layer of incrustated hyphae; tramal body beneath compact and merely pale ochraceous, not incrustated, subhymenium gelatinous; clamp connections present.

Naucoria corticola Murrill, cont.

Habit, habitat and distribution: On the bark of a dead stump, Cinchona, Jamaica.

Observations: If ^{one} you decides that gelatinous subhymenial tissue is a Pholiota character, this species would have to go there. See type.

Type

PHOLIOTA

SECTION FLAMMULA

KEY TO SUBSECTIONS

1. Spores typically less ^{or} ~~than~~ or up to 7 μ long
(see Sm-21298 also) Polychroae p 32
1. Spores typically more than 7 μ long
or if 6 - 7.5 μ long they are 5 - 6 μ
thick Heterosporae 53

PHOLIOTA
SECTION FLAMMULA
SUBSECTION POLYCHROAE

1. Truly lignicolous and occurring on logs, stumps, etc.
(but see nos. 33-1034; 5041; 3789 also) 2
1. Truly terrestrial or on the ground but near logs
or stumps or on their very decayed remains--
some occurring on sticks and bits of smaller
debris lying on the ground 9
2. Pileus bittersweet orange and blackening in age;
taste bitter ³²~~30~~. P. astragalina X
2. Not as above 3
3. Pileus purple gray becoming yellowish to orange
but usually remaining purplish to olivaceous
. ³²~~31~~. P. polychroa X
3. Pileus vinaceous brown at least over central part
("army brown", "Cameo brown" to "fawn color")
. ³⁴~~32~~. P. decorata X
3. Notes in either of above choices 4
 4. On hardwood 5
 4. On conifer wood 7
5. Pileus dingy ochraceous olive; odor of Cortinarius
percomis (fragrant) ³⁴~~33~~. P. Sm-20396 X
5. Not as above 6
6. Lamellae white when young; pileus
"cinnamon" at first ³⁶~~34~~. P. Sm-19239 X

6. Lamellae yellow when young; pileus
ochraceous tawny with a ^{pale} ~~pale~~ yellow
margin ³⁷ ~~35~~. P. Sm-43899 ^{near *apumosa*} X
7. Lamellae yellow when young ³⁶ ~~35~~. P. Sm-3109 ^{*apumosa*} (not found)
7. Lamellae whitish when young 8
8. Stipe bister from base up in age ³⁹ ~~37~~. P. Sm-24005 X
8. Stipe merely tawny at base in age ⁴⁰ ~~38~~. P. Sm-47117 X
9. Pileus \pm 15 mm. broad; veil pale testaceous
. ⁴¹ ~~39~~. P. subtestacea
9. Not as above 10
10. Pleurocystidia small, 25 - 40 μ long, often
more or less imbedded and with amorphous
content reminding one of chrysocystidia 11
10. Pleurocystidia longer and prominently
projecting 13
11. Pileus imbricate-squamose, rosy isabelline
. ⁴² ~~40~~. P. appendiculatum
11. Pileus glabrous and yellow 12
12. Cheilocystidia 40 - 50 \times 6 - 10 μ
. ⁴⁴ ~~41~~. P. Sm-33-1034 (no spore found)
12. Cheilocystidia 17 - 23 \times 6 - 8 μ
. ⁴⁵ ~~42~~. P. Burke (AG. Hebeloma) Sm-71424
13. Pileus whitish to near avellaneous and veil
white and rather heavy but annulus not
persistent ⁴³ ~~41~~. P. lenta (Sm-5041) X ^{This coll. not found}
13. Pileus more highly colored 14

not found

14. Lamellae pale yellow young
(see Sm-3789 also) . . . 44. P. subfulva (not found)
14. Lamellae white to pallid at first 15
15. Taste nauseous; odor raphanoid but soon
fading; veil stained rusty brown
. . . . 47. P. Moore 11-29-54 (not found)
15. Not as above 16
16. Stipe white, staining yellow where
handled 49 46. P. Sm-9393
16. Stipe whitish above but soon rusty brown
below and not staining yellow appreciably . 17
17. Pileus 4 - 15 cm. broad, ochraceous orange;
stipe becoming rusty brown over all 48. P. ⁹lubrica Sm-46383 X
17. Not as above 18
18. Pileus 3 - 6 cm., bay over disc, margin
buff; stipe fuscous from base up in age
. 50 48. P. lenta (Kauff.) X
18. Pileus 4 - 7 cm., russet to cinnamon
brown, margin whitish; stipe rusty brown
at base in age 51 49. P. ^{subfulva}Sm-3789 (not found)

Stropharia astragalina (Fr.) Kummer, Rev. F. 1871.
in die (Blatt) f. 82. 1871.

X 2 34

Pholiota astragalina (Fr.) Singer →

Agaricus astragalinus Fries, Syst. Myc. 1. 251. 1821.

Agaricus Neesii Borla, Champ. Prov. Nice, p. 46. 1859.

Dryophila astragalina Quélet, Enchir. Fung., p. 71. 1886.

Pileus 2-4 cm/ broad, obtusely conic or ^{at} obtusely umbonate when young, expanding to obtusely campanulate and finally with a spreading or uplifted margin which may become wavy, usually retaining a slight obtuse umbo, ~~surface~~ smooth, viscid to glutinous when wet, soon dry, glabrous except for pallid, fibrillose remains of the veil along the margin, color brilliant pinkish orange ("flame scarlet" to "bitter-sweet orange"), fading somewhat in age and soon developing blackish discolorations; ^{Context} ~~flesh~~ moderately thick, tapered evenly to the margin (about 4 mm, in the disc), pliant and watery, "Mikado orange" but soon paler yellowish orange; odor none, taste very bitter.

Lamellae sharply and deeply adnexed, at times appearing to be almost free, close, 2-3 tiers of lamellulae, moderately broad (3-4 mm), "capucine yellow" (orange yellow) but discoloring somewhat where bruised, edges even.

Stipe 5-9 cm, long, 4-7 mm, thick, equal, terete, hollow, flexuous, ^{apex} "cream color" within, ^{base} at ~~apex~~, sordid orange buff, ~~in the base~~, surface more or less fibrillose and pallid yellowish from the veil, base tinged faintly like the pileus and soon sordid orange, brown where handled, glabrescent.

Gymnopilus lactescens Murr., Mycologia 4: 251. 1912.
Stropharia lactescens Murr., Mycologia 4: 262. 1912.

Pholiota astragalina (Fr.) Cont.

Spores 5.5-6.5 x 4-4.5 μ , pale reddish tawny under the microscope in KOH, smooth, oblong to subellipsoid; basidia yellowish in sections in KOH, hyaline isolated, 4-spored, 18-23 x 5-6 μ ; pleurocystidia abundant, hyaline but with a highly refractive amorphous mass in the enlarged part as seen revived in KOH, 32-44 x 9-16 μ , mucronate or with a papillate apex, in some the papilla enlarged to a small knob, others tapered to a sharp point; cheilocystidia subcylindric but elongating to filamentous and up to 60 μ long, 3-6 μ thick; gill trama of narrow interwoven hyphae sordid yellowish to orange-yellow in KOH, the subhymenium very intricately interwoven and orange brown in KOH; pileus trama with a thick gelatinous pellicle of pale yellowish hyphae 2.5 thick, tramal body orange-brown in KOH, hypoderm not sharply differentiated, laticiferous hyphae numerous; clamp connections present.

Habit, habitat and distribution: Solitary, scattered or in small clusters on decaying wood of conifers during late summer and fall. Not uncommon in northern regions.

Observations: The brilliant color and the black stains which soon develop are good field characters along with the habitat on conifer wood.

Pholiota polychroa^a (Berk.) Smith & Brodie, Bot. Gazette

96: 545. 1935

Agaricus polychrous Berkeley, Land. Jour. Bot. 6: 313. 1847.

Agaricus ornellus Peck, Ann. Rep. N. Y. State Mus. 34: 42. 1883.

1883.

Flammula polychroa Saccardo, Syll. Fung. 5: 824. 1887.

Pholiota appendiculata Peck, Bull. N. Y. State Mus. 94: 33. 1905.

1905.

Pholiota ornella Peck, Bull. N. Y. State Mus. 122: 151. 1908.

Gymnopilus polychrous (Berkeley) Murrill, North Amer. Fl. 10:

204. 1917.

Pileus 3 - 9 cm, broad, obtuse to convex when young, with the margin curved, expanding to broadly convex or obtusely umbonate, surface glutinous to viscid and at first decorated with the remnants of the veil as creamy to avellaneous superficial squamules, margin often appendiculate with veil remnants, color dark purplish drab to purple-gray gradually developing yellow hues, finally often dull orange to yellow on the disc and the margin olivaceous (color extremely variable); ^{Context} flesh soft, moist, thick on the disc, thin on the margin; odor not distinctive, taste not recorded.

Lamellae close to crowded, moderately broad, varying in attachment from adnexed to decurrent, often seceding, pale cream color to pallid young, soon avellaneous to wood brown and finally a dark purplish brown with an olive tone, edges white fimbriate.

Smith, Alexander H. and Harold J. Brodie.
1935. Cultural characters and pairing
reactions of the fruit body of *Pholiota*
(*Hammula*) *polychroa*. Bot. Gaz.
96: 533-546.

Pholiota polychrous (Berk.) Smith & Brodie, cont.

Stipe 3 - 6 (8) cm, long, 3 - 5 mm, thick, slender and often narrowed downward, fibrous and solid, finally hollow at times, with fairly copious veil remnants distributed over the lower part as squamules or patches and these terminating in a fibrillose to submembranous evanescent annulus, glabrescent below in age, pallid to yellowish over the apical portion, becoming reddish brown below, often attached to the substratum by a mat of tawny hairs.

Spores 6 - 7 x 4 - 4.5 μ , elliptic to subovate in face view, bean-shaped in side view, smooth, cinnamon in KOH, apical pore very minute; basidia 4-spored, 20 - 24 x 5 - 6 μ , hyaline in KOH; pleurocystidia abundant, 38 - 55 (60) x 9 - 15 μ , fusoid-ventricose, hyaline or with yellowish content in KOH, smooth, thin-walled; cheilocystidia similar to or shorter and more clavate than the pleurocystidia and content usually orange-ochraceous as revived in KOH; gill trama a central strand of hyaline floccose hyphae more or less interwoven and flanked on either side by subgelatinous subhymenial tissue; pileus trama of floccose interwoven hyphae beneath a hyaline to yellowish gelatinous pellicle of appressed narrow hyphae 3 - 5 μ in diam.; clamp connections present.

Habit, habitat and distribution: Usually solitary or widely scattered to gregarious especially on wood of oak and hemlock, summer and fall; widely distributed.

Pholiota polychrous (Berk.) Smith & Brodie, cont.

Observations: The most luxuriant fruitings I have seen were in the tops of fallen oaks which had been down for about three years. It is an easily recognized species by virtue of the colors of the pileus even though they are variable.

Pholiota decorata (Murr.) comb. nov.

Gymnopilus decoratus Murrill, Mycologia 4: 251. 1912.

Flammula decorata Murrill, Mycologia 4: 262. 1912.

Pileus 3 - 7 (9) cm/ broad, obtuse to convex when young, expanding to umbonate with a spreading margin, or nearly plane, surface glutinous to viscid and with numerous to scattered rows of concentrically arranged fibrillose scales ^{above} ~~on top of~~ the gelatinous layer, scales often disappearing before maturity, in age often glabrous and appearing fibrillose-streaked beneath the gluten, margin usually fringed with fibrils, disc dark vinaceous brown ("natal brown", "army brown" to "cameo brown" at first and fading to near "fawn color") the margin pallid to avellaneous but in age often Isabella color, ~~flesh~~ ^{Context} moderately thick, watery cartilaginous to soft and pliant, white to (in age) yellowish buff; odor faintly fragrant or lacking, taste mild or nearly so.

Lamellae moderately broad, adnate to sinuate, sometimes merely depressed, close, thin, white to yellowish ("ivory yellow"), becoming avellaneous and finally dingy clay color, edges even or nearly so.

Stipe 4 - 8 (11) cm/ long, 3 - 8 (10) mm/ thick, solid but becoming hollow, equal above a subbulbous base or base not enlarged, cortex brownish in base, yellowish to pallid above, surface over lower portion covered by dingy vinaceous brown floccose-fibrillose scales or patches from a ruptured sheath

Pholiota decorata (Murr.) comb. nov., cont.

which at first extends to the annular zone, apex silky and pale greenish yellow to pallid.

Spores $5.5 - 6 \times 4 \mu$, elliptic to subovate in face view, obscurely bean-shaped in side view, smooth, not truncate (apical pore minute), pale tawny in KOH; basidia $18 - 22 \times 7 - 8 \mu$, 4-spored; pleurocystidia abundant, $62 - 88 \times 9 - 14 \mu$, fusoid-ventricose with obtuse apices, smooth, walls slightly thickened, hyaline and smooth in KOH, cheilocystidia similar to pleurocystidia; gill trama with a floccose central strand flanked on either side by a gelatinous subhymenium; pileus trama homogeneous beneath the pellicle and hyaline; pellicle of gelatinous appressed hyaline to yellowish hyphae; clamp connections present.

Habit, habitat and distribution: Single to scattered on branches of conifers lying on the ground or in brush piles, common throughout the Northwest, late summer and fall.

Observations: The pleurocystidia are different from most members of the group with gelatinous subhymenium in that they are hyaline in KOH and with somewhat thickened walls.

X

percomis sp. nov.

Pholiota Sm-20396.

Pileus 3-5 cm, broad, broadly conic to obtuse with an inrolled margin, becoming expanded-umbonate or nearly plane, glabrous but streaked with a fringe of partial veil remnants on the margin, viscid, "Isabella color" except for a rusty tinge over disc, becoming "chamois" on margin or over all in age; ~~flex~~ ^{Cort.} pliant, sordid olivaceous; taste none, odor faintly fragrant as in Cort. percomis,

Lamellae depressed-adnate or with a slight tooth, moderately close to subdistant, broad, (5-9 mm), "primrose yellow" becoming sordid rusty from the spores, staining brownish where bruised, edges even.

Stipe 3-5 cm, long, 4-7 mm, thick, equal, hollow, "primrose yellow" at apex, more sordid yellowish and finally "mummy brown" at the base, surface appressed fibrillose and the aggregations of fibrils often with a tawny tinge.

Spores 6-7.5 x 4-4.5 μ , elliptic or nearly so in face view, obscurely bean-shaped to obscurely inequilateral in side view, ochraceous tawny in KOH and paler in Melzer's, no apical pore evident under high dry lens; Basidia 4-spored, 20-24 x 6-6.5 μ , hyaline to yellowish in KOH; Pleurocystidia abundant, hyaline to yellowish, 40-60 x 10-14 μ , fusoid-ventricose with subacute apices, thin-walled, yellowish revived, in KOH and content homogeneous; cheilocystidia broadly rounded at apex or similar to pleurocystidia 26-38 x 9-12 μ , yellowish in H₂O & KOH; Gill trama

Pholiota Sm-29396. Cont.

with a gelatinous subhymenium and a central floccose strand the latter pale tawny in KOH; ~~Pileus with a~~ Cuticle of appressed gelatinous hyphae olivaceous in H₂O and yellow in KOH, pigment incrustated, with a dark rusty-fulvous hypoderm in KOH (revived) but this not evident on fresh material, tramal body yellowish in KOH; clamp connections present.

Habit, habitat, and distribution: Cespitose gregarious on old aspen logs, Mud Lake Bog, Washtenaw County, Mich. June 6, 1945, Sm-20396.

Observations: This is in the P. spumosa group, but I don't believe it synonymous with spumosa.

Notes by Howard

(Copy attached)

occidentalis

X

36

Pholiota Sm-19239.✓

Pileus (2)2.5-6(6) cm, broad, obtuse becoming broadly umbonate, surface glutinous with fibrillose remains of the veil scattered along the margin, fibrils beneath the gluten finally becoming aggregated to form fascicles, "cinnamon" when young, becoming "pale cinnamon buff" along the margin, in age often ± avellaneous over watersoaked marginal area, ^{Contest} flesh thick in the disc, pallid to pale watery buff; odor and taste not distinctive.

Lamellae [↑]white, finally becoming pale clay color, close, 1-2 tiers of lamellae, broadly adnate to almost arcuate, narrow, broadest near stipe (3-4 mm), edges even.

^{in age} Stipe 3-4 cm, long, 3-5 mm, thick, equal, solid, whitish, [↑]with a cinnamon tinge, ~~in age~~, more or less silky-fibrillose from the remains of the thin fibrillose veil, in age slightly darker at base (dark sordid brown).

Spores 6-7 × 3.5-4.2 μ, oblong in face view, obscurely bean[↑]shaped in side view, ochraceous tawny to tawny in KOH, smooth, apical pore very minute^B; Basidia 4-spored, nearly hyaline in KOH, 18-22 × 7-8 μ; ^PPleurocystidia abundant, 50-70 × 9-14 μ, smooth, walls thin to slightly thickened and yellowish in KOH, fusoid ventricose with obtuse apices and walls often flexuous (as revived); cheilocystidia [↑]ventricose with scarcely any tapering to the obtuse apex or with a short thick neck, 30-40 × 9-14 μ, otherwise like the pleurocystidia^G; gill trama of a ^Qflaccose, ± interwoven central strand flanked by a narrow zone of subgelatinous tissue (character not showing on many gills), yellowish-hyaline in KOH; ^Qpileus trama ^Qflaccose-interwoven, hyaline in KOH, no

Pholiota Sm-19239. Cont.

colored hypoderm present, [@]cuticle of gelatinous interwoven yellow, incrusted hyphae 3-6 μ in diam. [@]Clamp connections present.

Habit, habitat and distribution: Scattered on Alnus Rhododendron, Ore. Sept. 29, 1944, Gruber (Sm-19239).

Observations: This is the small pale cinnamon species so common on remains of alder and other hardwoods in the Pacific Northwest. Murrill must have found it. Look among his things for a name.

Pholiota

Alnus

innocua

Pholiota Sm-43899 (~~near spumosa~~)^V

Pileus 2 - 6 cm/ broad, obtuse with an incurved margin, becoming plane or slightly umbonate, glutinous and with fibrillose streaks beneath the gluten, at first with remnants of a thin veil distributed along the margin, margin "warm buff", disc ochraceous tawny to tawny; ~~flesh~~ ^{Context} pale yellowish white; odor and taste not distinctive.

Lamellae pale yellow (⁺ concolorous with margin of pileus), finally pale rusty brown from spores, close, adnate to decurrent, moderately broad, horizontal, edges uneven.

Stipe 4 - 7 cm/ long, 5 - 8 mm/ thick, equal or nearly so, whitish, brittle, stuffed solid, silky above, with a faint zone left by the broken veil but this soon evanescent, lower down with squamules or zones of cinnamon-buff veil ~~remnants~~ ^{tissue}, base becoming dark rusty brown in age; ^V Veil submembranous and most of it adhering to margin of pileus.

Spores 5.5 - 6.5 (7) × 3 - 5 μ, oblong in face view, obscurely bean-shaped to elliptic in side view, ochraceous in KOH, smooth, apical pore very minute; Basidia 4-spored, 18 - 20 × 5 - 6 μ, mostly ochraceous in KOH; ^P Pleurocystidia abundant, 40 - 60 × 12 - 20 μ, broadly fusoid-ventricose with slightly tapered necks and obtuse to rounded apices, hyaline to yellowish in KOH, smooth, thin-walled; cheilocystidia similar to pleurocystidia; ^G Gill trama subparallel, the hyphal cells somewhat inflated, nearly hyaline in KOH,

Pholiota Sm-43899, cont.

subhymenium very narrow and only subgelatinous hence not clearly separating the hymenopodium from the floccose strand tissue; Pileus trama hyaline and floccose-interwoven beneath a hypoderm of dark rusty brown hyphae (not differentiated as to size), and this giving rise on upper side to a gelatinous pellicle of appressed yellow-walled hyphae; Clamp connections present.

omit
Habit, habitat and distribution: Cespitose-gregarious on hardwood logs, Tahquamenon Falls State Park, Michigan, Oct. 9, 1953, Sm-43899.

Copy
Observations: The cystidia differentiate this from P. spumosa. The very small spores, fat cystidia and lack of a distinctly gelatinous subhymenium, and habitat on hardwood logs appear distinctive.

Pholiota Sm-3109 / spumosa X

Pileus 3.5 - 6.5 cm, broad, obtusely conic to convex, in age broadly convex, surface covered by a thick coating of gluten (wet weather), appearing streaked beneath the gluten as if fibrillose, margin at first with scanty remains of the veil, color when young "olive ochre" on the margin, darker and more brownish toward the "buckthorn brown" disc, at maturity the margin whitish and the disc a sordid ochraceous-tawny, ^{Context} ~~flesh~~ a watery "bright green yellow" to bright "chalchedony yellow", rather soft and pliant, tapering abruptly from the disc; odor and taste none.

Lamellae subdistant to close, moderately broad, bluntly adnate at first, rounded adnate in age, broadest at base, seceding, when young "sulphur yellow" to "pale greenish yellow", slowly pale cinnamon brown in age, edges even.

Stipe 5 - 8 cm, long, 4 - 7 mm, thick, equal or nearly so, fibrous, and not brittle, "pale greenish yellow" above, sordid olivaceous tawny near the base, in age almost bistre below, faintly silky fibrillose from the cortina, base cottony.

Spores 6 - 7 x 4 - 4.5 μ , oblong to elliptic in face view, obscurely bean-shaped in side view, smooth, tawny in KOH, apical pore extremely minute; Basidia 4 - spored, 22 - 25 x 6 - 7 μ , hyaline in KOH; Pleurocystidia abundant, 40 - 66 x 10 - 16 μ , fusoid-ventricose with obtuse apices and tapered rather evenly from ventricose portion to apex, walls thin and hyaline, content

Pholiota Sm-3109 (spumosa ?), cont.

hyaline to yellow in KOH, smooth; cheilocystidia smaller than pleurocystidia and many ventricose with broadly rounded apices and scarcely any neck (almost elliptic-pedicellate), yellowish in KOH and smooth; Gill trama with a floccose central strand flanked on either side by a well-developed gelatinous subhymenium; Pileus trama floccose-interwoven and yellowish to hyaline in KOH; hypoderm a layer of compactly interwoven heavily incrustated hyphae yellow-fulvous in KOH, ^{Pellicle} ~~pellicle~~ a layer of narrow yellow-walled gelatinous appressed hyphae; Clamp connections present.

Habit, habitat, and distribution: Densely gregarious on fir logs, Lake Crescent, Washington, October 12, 1935, Sm-3109.

Observations: I take this to be P. spumosa.

Notes by Hesler

Spores 5.5-7(7.5) x 3.7-4.5 μ , ^{oblong-ellipsoid,} ellipsoid to inequilateral, smooth, pore minute. Basidia 22-26 x 5-6 μ , 4-spored. St. 44-65 x 10-15 μ , ventricose; ch. 35-43 x 8-12 μ , ventricose, obclavate, subcylindric, ellipsoid-fusoid. Gill trama a mediotrache hyphae subparallel, 3-6 μ broad, flanked by a gelatinous subhymenium. Pileus trama radial-interwoven. Cuticle ~~over~~

gelatinous. Hypodermium 7 brown, mottled
hyphae. Clamps present. Caulocystidia
24-62 x 5-12 μ , clavate, apiculate, ventricose,
or fusoid.

X

studied

Pholiota spumosa X Sm-16313. ✓

Pileus 3-6 cm, broad, obtuse to convex when young, the margin inrolled and fibrillose from the veil remnants, surface glutinous when young, "Isabella color" over all when young, becoming "honey yellow" toward the margin and more or less "tawny olive" on the disc in age, central portion more or less rusty brown and often roughened from small aggregations of the drying gluten; ^{Content} ~~fresh~~ thick in the disc, thin toward the margin color near "reed yellow"; odor and taste perfectly mild.

Lamellae "barium yellow", adnate becoming decurrent by a tooth, moderately broad (4-5 mm, near the stipe), close, 2-3 tiers of lamellulae, when young staining brown when bruised.

Stipe 3-5 cm, long, 4-5 mm. thick, equal, stuffed becoming hollow, pliant, "amber yellow" within, surface "naphthalene yellow" to "barium yellow" above, becoming sordid brown near the base, surface covered by a thin coating of yellow fibrils from remains of a veil, apex pruinose and greenish yellow.

Spores ^{5.5-7.5 x 3.5-4.2 μ} ~~6-7 x 4-4.5 x 3-4 μ~~, broadly ovate to elliptic in face view, obscurely inequilateral to almost bean-shaped in side view, smooth, with a small apical pore, buckthorn brown in KOH; Basidia 4-spored, 20-24 x 6-7 μ, pale yellow in KOH; Pleurocystidia abundant, fusoid-ventricose, 50-65 x 10-15 μ, apices obtuse, content homogeneous and pale yellow in Melzer's sol., in KOH ochraceous and with refractive granules in some; cheilocystidia same type as pleurocystidia but smaller; Gill trama with a floccose yellowish (in KOH) central strand flanked on either side by well developed gelatinous subhymenium; Pileus trama with

Pholiota spumosa? Sm-16313. Cont.

a gelatinous pellicle of yellowish hyphae 3-4 μ in diam., and interwoven, a rusty brown hypoderm beneath it with heavily incrustated hyphae, the tramal body nearly hyaline and homogeneous in KOH; clamp connections present.

Habit, habitat and distribution: Gregarious on conifer logs, Swift Creek, Mt. Baker, Wash. Aug. 23, 1941. Sm-16313.

Observations: This ^{is} ~~appears to be either~~ P. spumosa, or ~~something very close to it.~~

occidentalis
Pholiota Sm-24005.

X

Pileus 3-6.5 cm. broad, convex with an incurved margin which at first is fibrillose from the remains of the veil, expanding to plane and then often splitting radially, surface at first decorated with minute fibrillose squamules, glabrescent, very glutinous, disc ^{cinnamon >} "cinnamon buff" toward the margin, at maturity appearance fibrillose-streaked beneath the gluten; flesh thin, watery pallid, whitish faded, odor and taste none.

Lamellae broad (5-6 mm), broadly adnate-subdecurrent, broadest near stipe and tapered to the margin, close to nearly subdistant, when young whitish, darker ("wood brown") at maturity, edges even.

Stipe 3-4(5) cm. long, 4-8 mm. thick at apex, slightly narrowed downward, stuffed becoming hollow (from worms), white at first, surface with white fibrillose flecks from remains of the veil, in age becoming "bister" from base upward and with a slight evanescent zone left from the veil, prunose above.

Spores 6-7 x 4.5 μ , ovate in face view, obscurely inequilateral in side view, or slightly bean-shaped, smooth, pale tawny in KOH, apical pore minute; basidia 4-spored, 20-24 x 6-7 μ , sections of hymenium yellow in KOH; pleurocystidia 60-80 x 9-13 μ narrowly fusoid-ventricose with obtuse apices and long often undulating necks with yellow content in KOH, walls slightly thickened in ventricose part and yellowish in KOH; cheilocystidia shorter than the pleurocystidia and hence broader in relation to their length, otherwise similar or nearly so; gill trama with an interwoven central floccose strand flanked by gelatinous

Pholiota Sm-24005. Cont.

subhymenium; pileus trama floccose-interwoven, hyaline in KOH except for the yellowish to ochraceous hypodermal zone, pellicle above this of hyaline appressed, gelatinous narrow (2-4 μ) slightly roughened hyphae; clamp connections present.

Habit, habitat and distribution: Scattered on a conifer log, E. Fork, Salmon River, Mt. Hood, Ore. 4000 ft. elev. Oct. 3, 1946, Sm-24005.

Observations: This is near the cinnamon colored species on Alnus --- compare carefully.

#9.28
41

Pholiota ^{praelixa} ~~eximiosa~~ sp. nov.

Pholiota Sm-33-1034.

Pileus (1.5)2-4(6) cm. broad, broadly convex with an incurved margin, in age broadly convex-depressed with a decurved margin, glabrous, glutinous, margin somewhat appendiculate from the sub-membranous veil, "honey yellow" to "yellow ochre" over all when young, in age the margin paler and the disc "ochraceous tawny", often appearing fibrillose-streaked beneath the gluten; ^{Context} flesh cartilaginous tough, yellowish; odor not distinctive, taste slightly disagreeable.

Lamellae ^{adnate,} crowded, narrow (3 mm), tapering ^{outward,} to ~~margin~~, ~~adnate~~, pale yellow to pallid, slowly becoming dull brownish with a slight chocolate shade, edges becoming slightly eroded.

Stipe 3-5 cm/ long, 2-4 mm/ thick at apex, narrowed downward, hollow, rigid-fragile, yellowish over apical region, sordid tawny below, with scattered patches of fibrils to appressed fibrillose-squamulose below, annular ~~zone~~ interrupted and soon evanescent, punctate-fibrillose over apex.

Spores 6-7 x 4 μ , elliptic in face view, obscurely bean-shaped in side view, smooth, tawny in KOH, between "buckthorn brown" and "Dresden brown" in mass, apical pore minute; basidia 18-22 x 3-6 μ , 4-spored, hyaline in KOH; pleurocystidia abundant ^{and} ~~one~~ fusoid-ventricose to mucronate, 30-40 x 9-12 μ , with a highly refractive amorphous body as revived in KOH or filled with orange-brown wrinkled content (chryso-cystidia); cheilocystidia 40-50 x 6-10 μ , narrowly fusoid-ventricose and lacking an amorphous content, hyaline in KOH, smooth; gill trama with a central

Dresden brown

Rhizoctonia Sm-33-1034. Cont.

← strand of parallel hyphae ochraceous brown in KOH and flanked on either side by a broad band of gelatinous subhymenial tissue; pileus trama floccose-interwoven and yellowish in KOH, with a hypodermis of narrow rusty brown hyphae with incrustated walls, and above this a thick gelatinous pellicle of yellowish to hyaline hyphae 2-4 μ in diam and mostly with roughened walls; turf structure present, but obscure; clamp connections present.

Habit, habitat and distribution: Densely caespitose-gregarious on and around stumps and logs of elm and ash, Sept. 28, 1933, Lakeland, Mich, Sm-33-1034.

Observations: This is a well characterized species in Southeastern Michigan both in the field and herbarium. It is not common but when it fruits it is the most conspicuous species in our low elm or ash swamps because of the number of carpophores produced. The abundant chrysocystidia are distinctive microscopically.

X 41

subfubra

Pholiota Sm-47117

Pileus 2 - 3.5 cm, broad, convex with an inrolled margin, expanding to broadly convex or nearly plane, surface viscid and at first decorated with concentric rows of minute appressed fibrillose squamules; dull cinnamon to pale tawny on the disc, whitish over marginal area; ^{Context} flesh white, thick ^{over} in the disc, thin over the margin; odor and taste not distinctive.

Lamellae whitish when young, slowly becoming dull wood brown, broadly adnate to subdecurrent, close, arcuate, ~~only~~ moderately broad.

Stipe 4 - 5 cm, long, 5 - 6 mm, thick, equal, solid, white and minutely fibrillose-squamulose above, soon tawny at the base, veil very thin and pallid.

Spores 5 - 6.5 x 3.5 - 4 μ , obscurely bean-shaped in side view, elliptic to ovate in face view, smooth, dingy ochraceous-tawny in KOH, apical pore minute; Basidia 4-spored, 20 - 22 x 5 - 6 μ , yellowish to hyaline; Pleurocystidia abundant, 48 - 65 x 10 - 15 μ , fusoid-ventricose, tapered fairly evenly to an obtuse to subacute apex, walls of ventricose part often yellowish and slightly thickened (in KOH), content hyaline to yellowish, smooth; cheilocystidia similar to pleurocystidia but smaller and more with yellow content in KOH; Gill trama with a parallel to subparallel floccose central strand, flanked on either side by a gelatinous subhymenium; Pileus trama floccose-interwoven and hyaline

Pholiota Sm-47117, cont.

(in KOH) beneath a rusty brown hypoderm of compactly interwoven, narrow hyphae with colored walls, and some incrusting pigment; Cuticle a thick gelatinous layer of hyaline to yellowish often roughened narrow hyphae (2 - 4 μ) arranged in a tangled mass (probably a turf structure); Clamp connections present.

Habit, habitat and distribution: Gregarious on conifer wood, Upper Payette Lakes, Idaho, August 31, 1954, Sm-47117.

Observations: This resembles P. spumosa somewhat but distinct ⁱⁿ color, character of wall in pleurocystidia, and possibly by the structure of the cuticle.

~~Pholiota spumosa~~

X

Pholiota subtestaceum (Murrill)

Hebeloma subtestaceum Murrill, N.A.F. 10: 226. 1917.

Pileus 8 mm. broad, 5 mm. high, broadly conic, umbonate, not fully expanding, surface smooth, viscid, pale testaceous on the umbo, the color somewhat more dilute over the rest of the surface, margin fibrillose from the remains of the evanescent veil, incurved, concolorous.

Lamellae adnate, broad, rather distant, white to sub-fulvous, entire and concolorous with the edges.

Stipe 3 cm. long, 2 mm. thick above, 4 mm. below, stramineous, decorated with loose tufts of testaceous fibrils from the remains of the fibrillose testaceous veil.

Spores 6 - 7 x 4 - 4.5 μ , ellipsoid, smooth, dark buckthorn-brown in KOH, apical pore absent; basidia 4-spored, 17 - 20 x 5 - 6 μ , yellowish hyaline in KOH; pleurocystidia very abundant, 40 - 55 x 10 - 16 μ , fusoid ventricose, apices merely obtuse, content yellowish or hyaline; cheilocystidia similar to pleurocystidia; gill trama with a floccose central strand flanked by subgelatinous subhymenial layers; pileus trama with a rusty brown hypoderm and above this a thick gelatinous pellicle of appressed hyphae; clamp connections present.

Habit, habitat and distribution: Solitary on rich soil in woods, Morce's Gap, near Cinchona, Jamaica, Dec. 29, 30 - Jan. 2, 1908-9. Murrill 710.

Pholiota subtestaceum (Murrill), cont.

Observations: This is clearly a Pholiota near carbonaria but apparently not on burned soil and with a testaceous veil rather than a cinnabar one.

Pholiota appendiculatum (Murrill) *comb. nov.* →
North Amer. Flora
| Hebeloma appendiculatum Murrill, *N.A.F.* 10: 220. 1917.

Pileus ± 5 cm. broad, convex, rather thick and fleshy and not fully expanding, slightly gibbous in some, surface viscid, silky and also finely imbricate-squamulose, rosy-isabelline, creameous on the disc, margin deflexed ^{and} concolorous, appendiculate with triangular fragments of the slight evanescent veil; Context white, thick at the center, taste nutty.

Lamellae ^{as} sinuate, broad behind and tapering in front, quite narrow, arcuate, very crowded, pale cream color and not darkening on drying, the edges pallid and distinctly crenate or dentate.

Stipe ± 4 cm. long, 1 cm. thick, equal, spongy-stuffed with creamy-white pith, glabrous at apex, white above, concolorous below, revolute-squamulose.

Spores 5 - 6 x 3.5 - 4 μ, somewhat bean-shaped in side view, elliptic to oval in face view, with a distinct apical pore but not truncate, pallid ochraceous tawny in KOH; basidia 4-spored, 14 - 16 x 6 μ, hyaline in KOH; pleurocystidia scattered, 20 - 28 x 6 - 9 μ, fusoid-ventricose with obtuse apices, thin-walled, hyaline in KOH, smooth; cheilocystidia 28 - 34 x 7 - 11 x 6 - 8 μ, ventricose-subcapitate, to irregular in shape with obtuse apices, hyaline, thin-walled, readily collapsing; gill

Pholiota appendiculatum (Murrill), cont.

trama with a hyaline floccose central strand flanked on either side by gelatinous subhymenial layers, pileus trama homogeneous and colorless beneath a gelatinous pellicle of narrow hyaline tangled hyphae; clamp connections present.

Habit, habitat and distribution: Gespitose on the ground at the base of a sugar maple, N. Y. Bot. Garden, Bronx Park, N. Y., Sept. 4, 1912. W. A. Murrill.

Observations: This species is a Pholiota in all respects including the veil characters. It appears to have the same type of hymenium as P. kalmicola.

Burkei

Sm-71424

X

Pholiota (*Hebeloma* Burke AG)

Pileus 3 - 5 cm, broad, convex with an inrolled margin when young, expanding to plane or with a low broad umbo, surface glabrous, viscid, pellicle separable halfway to disc, when moist "honey yellow" over disc and paler toward the margin and near "Ecru olive", margin at times striatulate, hygrophanous and fading to "deep colonial buff" to "honey yellow" (not changing much), margin "colonial buff"; ^{Gutier} ~~flesh~~ cream color, not stained; taste mild, odor "not disagreeable, not bitter or farinaceous - Burke".

Lamellae close (± 5l reach the stipe), 5 tiers of lamellulae, sinuate with a decurrent tooth, moderately broad, when young near "Colonial buff", becoming "honey yellow" and finally "buckthorn brown", decurrent tooth often paler than remainder of lamella, edges even.

Stipe 3 - 5 cm, long, 4 - 9 mm, thick, equal to narrowed downward, solid, rigid, not fragile, glabrous over upper two-thirds, lower third coarsely fibrillose squamulose from the veil remnants, squamules reflexed, apex "massicot yellow" to paler when young, flesh concolorous; veil at first membranous, pallid, becoming subarachnoid and leaving a fringe on the cap margin and an evanescent zone on the stipe, squamules on lower part of stipe finally "buckthorn brown."

Spores 5.5 - 6.5 x 3.5 - 4 μ , ovate to elliptic in side view, in face view obscurely bean-shaped to elliptic, smooth

Pholiota (Hebeloma Burke AG), cont.

dingy pale tawny in KOH, apex obscurely truncate from a distinct but small apical pore; Basidia $18 - 21 \times 5 - 6 \mu$, pale yellow in KOH; Pleurocystidia, scattered, fusoid-ventricose, $25 - 33 \times 6 - 9 (11) \mu$, as revived in KOH with an irregular orange-brown amorphous content, surface smooth, thin-walled; cheilocystidia small, $17 - 23 \times 6 - 8$, and fusoid-ventricose with obtuse apices, rarely an elongated cell with a capitate apex can also be found, both types with homogeneous content, smooth and thin-walled; Gill trama with an ochraceous strand of floccose parallel hyphae on either side of which is a narrow hyaline subhymenial layer of subgelatinous hyphae; Pileus trama floccose, and homogenous beneath a gelatinous pellicle of narrow ($2 - 4 \mu$) hyaline appressed hyphae over which one can find some rusty ochraceous hyphae with incrusted walls (veil remnants); Clamp connections present.

Habit, habitat and distribution: Cespitose on bare ground in a road through a swamp; Seth Johnson's place, Birmingham, Ala. Sept. ²⁹ 1942. Burke (Hebeloma AG).

Observations: The pale yellow colors would seem to indicate a relationship to the P. alnicola group but this is not borne out by the specimens which are certainly Hebeloma-like in stature.

- not found

Pholiota lenta Sm-5041 (in Herb. as *gummosa*)

Pileus 3 - 10 cm, broad, obtuse to convex when young, the margin incurved, expanding to broadly convex or nearly plane, rarely with a low broad umbo, surface glutinous, whitish to pallid, disc becoming slightly darker (more or less avellaneus) and this color accentuated slightly on drying, at first variously decorated (but especially near the margin) with fibrillose squamules from the broken veil, glabrescent, margin often remaining fringed or appendiculate from veil remnants for a long time; ^{Context} flesh thick, white; odor none, taste not recorded.

Lamellae ^{white} white when young, gradually grayish brown to clay-color from the spores, close, broad, broadly adnate, edges even to fimbriate.

Stipe (3) 4 - 8 (12) cm, long, (5) 8 - 12 mm, thick, equal or nearly so, fleshy, brownish at the base and whitish elsewhere, covered with squamules or patches of veil remnants to the superior fibrillose evanescent annulus, quite squamulose at times, base darker in age.

Spores 5 - 6.5 x 4 - 4.5 μ , elliptic in face view, somewhat bean-shaped in side view, smooth pale tawny to tawny in KOH, apical pore minute (not visible under ordinary magnifications); Basidia 4-spored, 18 - 21 x 5 - 6.5 μ , hyaline or nearly so in KOH; Pleurocystidia abundant, fusoid-ventricose 50 - 65 x 9 - 14 μ , hyaline and smooth in KOH,

Pholiota lenta Sm-5041, cont.

the walls thin, apices obtuse; cheilocystidia similar to pleurocystidia but usually shorter, with thicker necks and broader apices; Gill trama with a central hyaline floccose, interwoven central strand flanked on either side by gelatinous subhymenial tissue; Pileus trama of floccose interwoven hyaline hyphae up to the gelatinous pellicle of hyaline narrow appressed interwoven hyphae; Clamp connections present.

Habit, habitat and distribution: Single to scattered on humus near decaying wood or attached to sticks and other small bits, usually in mixed woods but also in stands of hardwoods such as beech-maple with no accompanying conifers. Muskegon, Mich., Oct. 11, 1936, Sm-5041.

Observations: This is a whitish species with an almost *Hebeloma*-like stature characterized by the pale colors and heavy veil.

Note by Hesler : I have not found this collection. ^(Sm-5041)
A

Polyporaceae

Sm-796

not found

Pholiota subfulva (Pk) →← Flammula subfulva Pk., AM. Rep. N.Y. State Mus. 41:68. 1888.← Gymnopilus subfulvus (Pk) Murr. N.A.P. 10:204. 1917.
N.A. Flora

Pileus 3-7 cm/ broad, convex, becoming plane or slightly depressed, not umbonate, margin strongly decurved in age, appearing appressed fibrillose under an lens, fibrils tawny and arranged in fascicles beneath the gluten, disc "tawny", margin "pinard yellow" to "baryta yellow" and fibrillose from veil remnants, glabrescent; ^{inter} ~~flesh~~ thick, not fragile; odor, taste none.

Lamellae "baryta yellow" young, close, adnate-decurrent,
(not at all adnexed or sinuate), moderately broad, equal, edges even, in age rather dark clay color.

Stipe 4-6 cm/ long, 9-12 mm/ thick, enlarged above, "pale calchedony yellow" above and fibrous prunose, fibullose below and staining rusty in age, solid.

Spores 5-6 × 3μ, very pale tawny (nearly ochraceous in many) in KOH, elliptic ^{and} in face view, obscurely bean-shaped in side view, smooth, wall appreciably thickened, apical pore not evident; Basidia 4-spored, 20-23 × 6-7 μ, ochraceous in KOH;

Pleurocystidia abundant, (35)45-60(65) × 9-16 μ fusoid-ventricose with orange-ochraceous content in KOH, long/ pedicellate, necks broad and apices obtuse, smooth, some encrusted with orange-rusty amorphous material; cheilocystidia similar to pleurocystidia but smaller; ^g gill trama with an orange-fulvous floccose central strand flanked on either side by gelatinous subhymenial tissue;

Pileus trama floccose-interwoven, orange-ochraceous revived in KOH, with a rusty brown hypoderm hyphae with encrusted walls;

Clamp connections present.

Pholiota subfulva (Pk). Cont.

wrong number?

Habit, habitat and distribution: Cespitose around beech,
Warrensburg, New York, Sept. 12, 1934. Sm-796.

Observations: The small spores, more obtuse cystidia, and
habitat on hardwoods are distinctive.

Cl. with type of *P. subfulva*; the pl. differ
from those of the type.

48
Pholiota Moore 11-29-54

look? X
(= 8M-68417)

Pileus 3 - 9 cm, broad, convex, with an inrolled margin, becoming broadly convex to nearly plane, ~~surface~~ viscid, and with scattered agglutinated squamules from the broken veil, evenly pale "Sayal brown" (dull cinnamon); ~~fresh~~ ^{Contex} pallid, staining reddish brown; ~~taste nauseous~~, odor strongly raphanoid when package was first opened but soon fading, ^{taste} ~~nauseous~~.

Lamellae olive buff to olive, close narrow, crowded, adnate, slowly dull cinnamon brown, edges even.

Stipe 8 - 12 cm, long, ^{10-20mm} ~~2-3 cm~~, thick at apex, somewhat narrowed downward but with a small oval bulb at base; fibrous, solid, pallid brown above, darker below and soon rusty stains developing, becoming rusty to deep reddish brown from base up in age; Veil stained rusty and leaving a faint apical annulus or fibrillose zone, inconspicuous remains of the veil variously scattered over the surface and more or less evanescent.

Spores 5 - 6 x 4.5 (7 x 5) μ ellipsoid, smooth, dark cinnamon brown in KOH, apical pore not visible under ordinary magnifications; Basidia 20-22 x 6 - 7 μ , yellowish to hyaline in KOH; ^Pleurocystidia abundant 40 - 60 x 9 - 14 μ , fusoid-ventricose with necks 5 - 7 μ thick and obtuse apices, hyaline in water mounts, in KOH hyaline, yellow, ochraceous brown to russet and content more or less wrinkled as in typical chrysocystidia, walls thin, hyaline and smooth; cheilocystidia

Pholiota Moore 11-29-54, cont.

similar to pleurocystidia but mostly smaller; Gill trama parallel, pale cinnamon to hyaline in KOH, subhymenium not gelatinous; Pileus trama floccose-interwoven, mostly rusty-ochraceous revived in KOH, but much darker in hypodermal area; Cuticle a thick gelatinous pellicle, ~~made up~~ of an obscure turf of narrow ($\pm 2 \mu$) hyaline elongate and much branched hyphal elements; Clamp connections present.

Habit, habitat and distribution: Cespitose in sandy soil, Santa Monica, Calif., 11-29-54, coll. by Moore.

Observations: Get data from Mr. Moore's letter.

albiflavescens
Pholiota Sm-9393

Pileus 3 - 7 cm, broad, obtuse to convex, the margin incurved, expanding to plane or with a slight broad umbo, glutinous-viscid, at first between "hazel" and "ochraceous tawny", disc remaining yellowish ~~tawny~~, but ^{the} margin finally pale yellow, with radial fibrillose streaks beneath the gluten, glabrous except for veil remnants adhering along the margin. ^{Cortex} ~~slightly~~ thick, cartilaginous-pliant, whitish to watery yellowish, odor and taste mild.

Lamellae ^{slightly adnexed} close to crowded, equal, thin, ~~slightly~~ ~~adnexed~~, whitish at first, soon "wood brown", edges even.

Stipe 6 - 8 cm, long, 10 - 15 mm, thick, equal, stuffed, becoming tubular, surface fibrillose over lower portion from ^{yellowish} the veil remnants, with an apical fibrillose zone from the fibrillose to submembranous veil, white to whitish over all, soon stained yellow where handled and cortex yellow when cut, in age sordid rusty brown below (inside and out), base densely echinulate from radiating white hairs.

Spores 6 - 7 x 4 - 4.5 μ , ellipsoid, smooth, dull cinnamon in KOH, apical pore minute, wall only moderately thickened. Basidia 4-spored, 20 - 23 x 6 - 7 μ , hyaline or nearly so in KOH. Pleurocystidia abundant, 48 - 65 x 10 - 16 μ , fuscoid-ventricose, mostly hyaline in KOH to faintly yellow from pigment in the walls, ~~not~~ with

Pholiota Sm-9393, cont.

with refractive, amorphous content, in many the wall of the ventricose portion slightly thickened, apices obtuse to rounded (in those lacking appreciably narrowed necks); cheilocystidia similar to pleurocystidia, but generally smaller, with less neck and more rounded apices; Gill trama with a floccose strand of \pm parallel hyphae, flanked ~~on either side~~ by distinctly gelatinous subhymenial tissue; Pileus trama floccose-interwoven, pale lemon-yellow in KOH, the hypoderm^{ium} dark rusty brown but hyphae not appreciably enlarged. Pellicle of radial-appressed, gelatinous, yellow hyphae 2 - 3.5 μ in diam., and with incrusted pigment on some at least; Clamp connections present.

Habit, habitat and distribution: Scattered on debris under redwoods, Orick, California, Dec. 4, 1937, Sm-9393.

Observations: In poorly revived material many of the pleurocystidia showed an orange-brown wrinkled content, and ^{there are} in some indications of refractive amorphous material, ~~was present~~ so in these characters the species is similar to the others in this group. The outstanding characters are the appreciable veil, white stipe which stains yellow, white gills when young and "hazel" to "ochraceous tawny" pilei.

Notes by Hesler

Spores 5.5-7 x 4-4.5 μ , ellipsoid, smooth.
Pl. 46-68 x 10-14 μ , ventricose, with a neck
+ basal stalk; Ch 35-42 x 7-8 μ , fusoid-
over

ventricose, neck, if any, not conspicuous. Gill
trama a mediostrate, hyphae subparallel,
4-6 μ broad near edge; 6-15 μ broad near
pileus. ~~To~~ Subhymenium gelatinous. Pileus
trama radial. Cuticle gelatinous, hypodermium
of brown hyphae. Clamp connections present.
Caulocryptidia none.

50

Publularia sp. nov.

Pholiota Sm-46383 (cf. P. lubrica)

Pileus 4 - 10 (15) cm, broad, obtuse when young, expanding to obtusely umbonate, ~~surface~~ ^{brownish} viscid, with veil remnants in zones or patches along the margin, ~~veil remnants brownish~~, disc ochraceous tawny to ochraceous orange, margin pale pinkish buff to more yellowish, even, surface in old caps somewhat watery spotted; ^{Context} ~~flesh~~ white, no color change on bruising; ~~and~~ no distinctive odor or taste.

Lamellae close, bluntly adnate, often with a decurrent tooth, moderately broad, pallid when young, dull rusty brown at maturity, ~~and~~ occasionally rusty-spotted in age.

Stipe 4 - 10 cm, long, 10 - 15 mm, thick, equal, solid, fibrous-tough, ~~surface~~ whitish but base soon rusty brown and color change progressing upward, in age brown over all, apex silky, with a superior fibrillose zone or annulus, below this ragged-fibrillose to squamulose from the pallid veil remnants.

Spores 6 - 6.5 μ 3.8 - 4 (4.5) μ , elliptic to obscurely bean-shaped in side view, broadly elliptic to ovate in face view, a few very slightly compressed, smooth, dull cinnamon in KOH, with an obscure apical pore; Basidia 18 - 23 \times 4.5 - 5.5 μ , yellowish to hyaline in KOH, 4-spored; Pleurocystidia abundant, 50 - 70 \times 10 - 16 μ , fusoid-ventricose, apices obtuse, in KOH, a few clavate cystidia also present and these 30 - 50 \times 12 - 18 μ , all types with

Pholiota Sm-46383 (cf. P. lubrica), cont.

an ochraceous content as revived in KOH, or the cell cavity partly filled with ochraceous material, rarely hyaline, walls thin or some showing a slight thickening in the ventricose part and the pedicel; cheilocystidia similar to pleurocystidia but with less of a taper from ventricose part to apex, and some with debris adhering around the apex; Gill trama with a floccose central strand of sub-parallel hyphae flanked on either side by a gelatinous layer of subhymenial tissue; Pileus trama floccose-interwoven, mostly of hyaline hyphae with uninflated cells 8 - 14 μ in diam.; hypoderm a compact layer of narrow hyphae, 3 - 7 μ in diam. with heavy incrustations of rusty ochraceous pigment; Cuticle a thick gelatinous pellicle formed by a turf of greatly elongated intertangled narrow (2 - 3 μ) hyaline gelatinous hyphae; Clamp connections present on hyphae of pellicle and also of the pileus and gill trama as well as at the base of the basidia.

Habit, habitat and distribution: Gregarious around rotten logs, Stanley Lake, Sawtooth Mts., Idaho, August 19, 1954, Sm-46383.

Observations: This should be carefully compared with P. lubrica. The turf structure of the pellicle, the small spores, and large carpophores with the fairly heavy brownish-pallid veil remnants appear distinctive. The colors are not unusual for the group.

~~Notes by Hecker~~

(Copy attached)

2
Specimen not found -
Smith doubts it is Lenta. 51
Pholiota lenta ~~Freis~~ (Kauffman's Takilma card)

Pileus 3 - 6 cm. broad, obtusely conic with an incurved margin, expanding to plane with an abrupt obtuse umbo, glutinous, glabrous except for veil fibrils along margin, pale bay when young at least over disc, marginal area buff; flesh white, odor slight, taste none.

Lamellae adnate with a decurrent tooth, sometimes becoming subsinuate or seceding, narrow, crowded, white at first, pale clay color in age, edge even to slightly fimbriate.

Stipe slender, 4 - 6 cm. long, 3 - 6 (8) mm. thick, equal, stuffed to hollow, covered to the evanescent annulus by a white lacerate-fibrillose sheath, fuscous from base up in age; veil copious but soft in texture and readily collapsing.

Spores 6 - 7 x 4 - 4.5 μ , obscurely bean-shaped in side view, ovate in face view, dull tawny in KOH, smooth, apical pore minute; basidia 4-spored, 23 - 26 x 5 - 6 μ , hyaline in KOH; pleurocystidia abundant, 60 - 90 x 9 - 13 μ , narrowly fusoid ventricose with acute to obtuse (rarely subcapitate apices), with thickened walls in mid-portion, often of irregular shape; cheilocystidia smaller but otherwise similar to pleurocysts and also many orange-ochraceous clavate basidium-like cells present among the hyaline basidia causing the edge to be ochraceous; gill trama floccose-interwoven,

Pholiota lenta Fries, cont.

subhymenium not gelatinous or in a few sections showing a faint tendency in that direction; pileus trama not reviving well, pellicle gelatinous and hyaline to yellowish and of narrow appressed hyphae; clamp connections present.

Habit, habitat and distribution: Gregarious on conifer duff, Takilma, Oregon, December 7, 1925, Kauffman.

Observations: The long, narrow thick-walled pleurocystidia do not check with anything I remember offhand. I doubt if this is actually F. lenta Fries.

fulviconica
Pholiota Sm-3789.

Pileus 4-7 cm/ broad, conic-companulate to expanded and with a sharp conic umbo, glutinous when young and in age with patches of brownish gluten along the margin; extreme edge with fibrillose squamules from the broken veil, disc at first covered by appressed, buff colored fibrillose squamules, glabrous in age, "russet" to "cinnamon brown" on the disc, near "ochraceous tawny" toward the whitish margin; ^{Contest} ~~flesh~~ thick in the disc, tapering evenly, pale watery yellow, rather tough; odor and taste not distinctive.

Lamellae close, moderately broad (6-7 mm), equal, adnate, with a slight decurrent tooth, whitish to pale yellow becoming avellaneous to wood brown.

Stipe 6-8 cm/ long, 6-9 mm ^{thick,} equal, hollow, fairly tough, yellowish within, apex fibrillose-scurfy, fibrillose below the faint fibrillose zone with yellowish appressed fibrils, whitish above, base becoming dingy rusty brown. Veil (see under pileus).

Spores 6-7 x 4.5 μ , smooth, ellipsoid, pale tawny to ochraceous tawny in KOH, apical pore minute. Basidia 4-spored, 24-28 x 6-7 μ , hyaline in KOH. Pleurocystidia abundant, 50-70 (80) x 9-14 μ , fusoid-ventricose with obtuse apices, occasional ones clavate to ellipsoid-pediculate, walls often slightly thickened in ventricose part and yellowish, content often ochraceous and wrinkled to amorphous, at times with refractive particles in the apex; cheilocystidia similar to pleurocystidia but smaller. Gill trama with a floccose central strand of subparallel hyphae, flanked on either side by gelatinous subhymenial tissue. Pileus trama of floccose=interwoven hyphae \pm hyaline

Pholiota Sm-3789. Cont.

in KOH, hypoderm of narrow, rusty-ochraceous hyphae \pm radially arranged and above this a thick gelatinous layer of tangled but loosely arranged narrow (3-5 μ), yellow hyphae with some incrusting pigment (possibly a turf originally). Clamp connections present.

Habit, habitat, and distribution: Gregarious on redwood sticks and debris, Orick, Calif. Dec. 5, 1935, Sm-3789.

Observations: The thin, yellowish veil separates this from P. decorata. On P. Sm-9393 the veil is heavier, the cap is not conic, and there the white stipe stains yellow on handling. The veil material in ^{Sm-}3789 is nearest "pinkish buff", hence not a true yellow. The two are very closely related, however.

Notes by Hester

Spores 5.5-7.5 \times 3.5-4.5 μ , pore minute. PH
52-76 \times 9-12 μ , ventricose; Ch. 35-58 \times 8-10 μ ,
 \pm similar. Cuticle + subhymenium gelatinous.

This is Merrill's P. fulviconica.

Carlocephidia 35-52 \times 9-16 μ , ventricose.

PHOLIOTA
SECTION FLAMMULA
SUBSECTION HETEROSPORAE

1. Pleurocystidia not prominently projecting or if so with highly refractive amorphous content as revived in KOH 2
1. Pleurocystidia prominently projecting. 3
2. Cheilocystidia 45-55 x 14-28 μ ;
stipe evenly grayish-fibrous 53³. P. Sm-33-1109 *not found*
2. Cheilocystidia smaller (18-23 x
6-8 μ); stipe white but with pale
brownish appressed squamules 54. P. Sm-21298 X
3. Pleurocystidia typically with rounded
apices 4
3. Pleurocystidia obtuse to acute 6
4. Spores 8-10 x 4.5-5 μ 57⁵. P. kalmicola
4. Spores 6-8 μ long. (*scamba 7-10 μ*). 5
5. Pileus 7-9 cm. broad; stipe 10-18 mm.
thick. 53⁶. P. Sm-28421 X
5. Pileus 15-30 mm. broad; stipe 2-3 mm.
thick. 54⁷. P. scamba X
6. Pleurocystidia with acute apices;
cheilocystidia short and fat
(30-40 x 12-18 μ). 58⁸. P. Sm-20037 X
6. Pleurocystidia obtuse to subacute. 7
7. Scattered on hummocks in sphagnum bogs 59⁹. P. paludosella X
7. Not as above 8

8. Partial veil gelatinous ⁶⁰⁹~~58~~. P. Sm-9218
8. Not as above 9
9. Pileus cinnamon brown to clay color;
taste slightly farinaceous ⁶¹~~58~~. P. Gruber Idaho ⁴¹~~41~~ *not found*
9. Not as above 10
10. Stipe typically plus 5 mm. thick 11
10. Stipe typically 2 - 5 mm. thick 15
11. Lamellae white to pallid young 12
11. Lamellae distinctly yellow at first 13
12. Spores 6.5 - 8 x 3.4 - 4 μ ⁶²~~59~~. P. lubrica X
12. Spores 8 - 10 x 5 - 5.5 μ ⁶³~~60~~. P. Sm-33-1092 X
13. Pileus conic to conic-umbonate and honey yellow to
tawny olive; subhymenium not, or only somewhat,
gelatinous revived in KOH ⁶⁴~~61~~. P. Sm-19315 X
13. Pileus convex to obtuse and subhymenium gelatinous . . . 14
14. Cespitose to gregarious on conifer logs; pileus
olive to brownish olive young ⁶⁵~~62~~. P. ⁶⁴~~62~~ Sm-278 *Abundant not found*
14. On peaty soil in a burned area--much Funaria
present; pileus ochraceous tawny on disc and
straw yellow on margin ⁶⁶~~63~~. P. Sm-12064 *not found*
15. Pileus testaceous on umbo; stipe yellow
above, fulvous below; spores 4 - 5 μ wide ⁶⁷~~64~~. P. spinulifer X
15. Pileus natal brown to avellaneous;
spores 5 - 6 μ broad ⁶⁸~~65~~. P. pulchella X
15. Not as in either one of above choices 16
16. On conifer wood; no colored hypoderm on
sections of pileus revived in KOH . . . ⁶⁹~~66~~. P. Sm-16727 X

16. Terrestrial and with colored

hypoderm as revived in KOH 17

17. Lamellae creamy white (Murrill) young;

stipe pale yellowish brown ^{70/8} P. gregariforme X

17. Lamellae melleous (Murrill); stipe whitish buff

above, reddish tawny below ^{71/8} P. totteni X

specimen not found

Pholiota Sm-33-1109

Pileus 2 - 5 cm/ broad, convex, becoming broadly convex, flabby in consistency, glabrous or at most with thin patches of veil remnants along margin, glutinous, near ochraceous tawny at first, becoming pale buff near margin, margin finally near wood brown, ~~not~~ ^{Conte} striate; ~~flesh~~ ^{flesh} pliant; odor none, taste not recorded.

Lamellae crowded, narrow, adnate, dull grayish brown, edges even, near buckthorn brown as dried.

Stipe 3 - 6 cm/ long, 2 - 4 mm/ thick, equal, base with a dense tawny cushion of radiating aggregations of hyphae, evenly grayish-fibrous, becoming slightly lacerated, yellowish above, near mummy brown at base; Veil thin to rudimentary.

Spores 6.5 - 8 (9) × 4.5 - 5 μ, elliptic in face view, obscurely bean-shaped in side view, smooth, pale tawny in KOH, apical pore minute; Basidia 4-spores 18 - 22 × 6 - 7 μ, hyaline to yellowish in KOH; ^{as chrysocystidia,} Pleurocystidia imbedded, mostly arising from the floccose strand in the gill trama, 45 - 57 × 14 - 28 μ, voluminous and with a highly refractive amorphous mass as revived in KOH, ~~(hence chrysocystidia)~~ apex drawn out to an obtuse pupilla or short neck, hyaline in KOH except for amorphous content; cheilocystidia abundant, 20 - 34 (42) × 7 - 10 μ, fusoid-ventricose with obtuse to capitate apices or nearly filamentous-capitate, hyaline in KOH and thin-walled; Gill trama with a central yellowish,

Pholiota Sm-33-1109, cont.

floccose strand of subparallel to interwoven hyphae, flanked on either side by well-developed gelatinous subhymenial layers; Pileus trama floccose and homogeneous except for a yellow-fulvous hypoderm and a gelatinous pellicle of yellow, appressed, incrusted narrow (3 - 5 μ) hyphae; Clamp connections present.

Habit, habitat and distribution: Densely gregarious on a hardwood log, Wheeler's woods, Ann Arbor, Michigan, October 8, 1937, Sm-33-1109.

Observations: The cartilaginous consistency is striking. Compare carefully with 33-1034. I thought they were different in 1933.

Not same!

Pholiota Sm-33-1034.

caespitosa

Spec not formed.
Same as 5027!

Pileus (1.5)2-4(6) cm/ broad, broadly convex with an incurved margin, in age broadly convex-depressed with a decurved margin, glabrous, glutinous, margin somewhat appendiculate from the sub-membranous veil, ^{when young} "honey yellow" to "yellow ocher" over all, ^{when young} in age the margin paler and the disc "ochraceous tawny", often appearing fibrillose-streaked beneath the gluten; ^{Context} ~~flesh~~ cartilaginous tough, yellowish; odor not distinctive, taste slightly disagreeable.

Lamellae crowded, narrow (3 mm), tapering to cap margin, adnate, pale yellow to pallid, slowly becoming dull brownish with a slight chocolate shade, edges becoming slightly eroded.

Stipe 3-5 cm/ long, 2-4 mm/ thick at apex, narrowed downward, hollow, rigid-fragile, yellowish over apical region, sordid tawny below, with scattered patches of fibrils to appressed fibrillose=squamulose below, annular zone interrupted and soon evanescent, punctate-fibrillose over apex.

Spores 6-7 x 4 μ , elliptic in face view, obscurely bean-shaped in side view, smooth, tawny in KOH, between "buckthorn brown" and "Dresden brown" in mass, apical pore minute; Basidia 18-22 x 5-6 μ , 4-spored, hyaline in KOH; ^{as chrysocystidia} ~~pleurocystidia~~ abundant one fusoid-ventricose to mucronate, 30-40 x 9-12 μ , with a highly refractive amorphous body as revived in KOH or filled with orange-brown wrinkled content (~~chrysocystidia~~); cheilocystidia 40-50 x 6-10 μ , narrowly fusoid-ventricose and lacking an amorphous content, hyaline in KOH, smooth; ^g ~~gill~~ trama with a central

Pholiota Sm-33-1034. Cont.

← strand of parallel hyphae ochraceous brown in KOH, ~~and~~ flanked on either side by a broad band of gelatinous subhymenial tissue.
Pileus trama floccose-interwoven and yellowish in KOH; with a hypoderm of narrow rusty brown hyphae with incrusted walls, and above this a thick gelatinous pellicle of yellowish to hyaline hyphae 2-4 μ in diam and mostly with roughened walls; turf structure present, but obscure; clamp connections present.

Habit, habitat and distribution: Densely caespitose-gregarious on and around stumps and logs of elm and ash, Sept. 28, 1933, Lakeland, Mich, Sm-33-1034.

Observations: This is a well characterized species in Southeastern Michigan both in the field and herbarium. It is not common but when it fruits it is the most conspicuous species in our low elm or ash swamps because of the number of carpophores produced. The abundant chrysocystidia are distinctive microscopically.

Note by Hesley: I have not found this collection

Cantharellus

Pholiota Sm-21298

Pileus (2) 3 - 6 cm, broad, obtuse to convex young, becoming plane to slightly depressed, rarely with a low umbo, surface viscid, at first covered by small appressed grayish brown scales from the universal veil, glabrescent, ground color pallid at first, developing buff tones around and over the disc or eventually slightly argillaceous, margin usually remaining decurved a long time and fringed with veil remnants; ^{Context} flesh white at first, flushed yellowish in age; odor and taste none.

Lamellae pallid becoming yellowish, finally rusty brown, ^{close,} broad, adnate to subdecurrent, ~~close,~~ depressed adnate,

Stipe 4 - 7 cm, long, 6 - 10 mm, thick, equal or narrowed toward the base, solid, white but coated with pale dingy pale brown more or less appressed squamules to the annular fibrillose zone, whitish and silky above.

Spores 6.5 - 7.5 (8) \times 4 - 4.5 μ , oblong to elliptic in face view, elliptic to slightly bean-shaped in side view, smooth, pale cinnamon in KOH, apical pore visible under ordinary magnifications. Basidia 17 - 20 \times 5 - 6 μ , 4-spored, hyaline or nearly so in KOH. ^Pleurocystidia present as chrysocystidia, 18 - 26 \times 7 - 10 μ , fusoid-ventricose, thin-walled and with refractive material in amorphous masses variously distributed; cheilocystidia of 2 types,

Pholiota Sm-21298, cont.

the first similar to the pleurocystidia and the second merely fusoid-ventricose to clavate cells $18 - 23 \times 6 - 8 \mu$ with obtuse to rounded apices, some yellowish in KOH; ~~gill~~ ^{gill} trama parallel, hyaline in KOH; subhymenium very thin and not gelatinous; pileus trama of compactly interwoven inflated hyphal cells, hyaline in KOH; ~~the~~ ^Cuticle a thin pellicle of appressed gelatinous hyphae yellowish in KOH (thick sections tawny); clamp connections present.

Habit, habitat and distribution: Cespitose-gregarious on soil in woods - along roads, especially where there are chips or sawdust in the soil, Ann Arbor, October 8, 1945, Sm- 21298.

Observations: The small spores, pallid pilei with the brownish veil remnants, chrysocystidia, and generally yellow tones that develop in age are distinctive along with the non-gelatinous subhymenium. In Sm-21299, the veil was browner, the cap yellow in age except for argillaceous disc, the stipe was yellow and the base was cinnabar in old ones. In material seen since 1945 the cinnabar color of the stipe base was not present but the general yellow tones developing in age are characteristic.

Notes by ~~Harley~~

Pholiota kalmicola (Murrill)

Hebeloma kalmicola Murrill, N.A.Fl. 10: 218. 1917.

Pileus 2.5 - 3.5 cm, broad, convex expanding to convex-depressed, not umbonate, surface moist, subglabrous, uniformly yellowish white to cream-colored, margin entire, concolorous, not striate. Context thin, with slightly unpleasant taste, ~~and no odor~~ none.

Lamellae adnexed or sinuate, very broad, moderately close, thin, yellowish white to dirty white, entire and concolorous on the edges.

Stipe 5 cm, long, 3 mm, thick, slender, cylindric, equal, fibrillose, slightly darker than the pileus, hollow.

Spores (7) 8 - 10 x 4.5 - 5 μ , narrowly ovate to elliptic in face view, elliptic to obscurely inequilateral in side view, smooth, dark buckthorn brown in KOH. Basidia 18 - 20 x 6 - 7 μ , 4-spored, sections of hymenium yellow in KOH. Pleurocystidia typically none, but some similar to cheilocystidia often found near the gill-edge; cheilocystidia fusoid-ventricose with rounded to obtuse apices, 18 - 28 x (7) 9 - 14 μ , sometimes merely mucronate, hyaline in KOH, thin-walled, smooth. Gill trama of a pallid floccose central strand of somewhat interwoven hyphae flanked on either side by a broad band of gelatinous subhymenial tissue. Pileus trama with a central body of hyaline floccose interwoven hyphae above which is a hypoderm of bright rusty-ochraceous, encrusted, more or less enlarged hyphal cells,

Pholiota kalmicola (Murrill), cont.

over this is a cuticle of narrower ($4 - 7 \mu$) subgelatinous pale yellow nearly smooth tangled hyphae; Clamp connections present. *Pileus + gill trama yellowish brown in KOH; dark brown in*

Meyer's reagent.

Habit, habitat and distribution: Gregarious on a much-decayed mossy stump of *Kalmia latifolia*, Apple Orchard, Bedford, Virginia, October 24 - 27, 1916. W. A. Murrill.

Observations: The spore size as given in Murrill's original description is erroneous. The spores, gill trama, pileus trama and habitat on wood make this a typical "Flammula" of the Friesian classification. The part of the type examined was apparently partly sterile, which accounts for the pale gills. The stature is much like that of *Naemotoloma myosotis*, but no chrysocystidia were found and the gill trama is different, even if the generally pale color is disregarded.

abruptibulba

X

Pholiota Sm-28421

Pileus (4) 7 - 9 cm. broad, convex with an inrolled margin, becoming broadly expanded with a decurved margin, very glutinous, glabrous except for scattered remains of veil near margin, cortina thin and pallid leaving only a few traces, disc "ochraceous tawny" or a little darker, "pinkish buff" on margin; flesh yellowish pallid, thick, odor and taste not distinctive.

Lamellae broadly adnate-decurrent, in age short-decurrent, close to only moderately close, broad, pale yellowish (f "cartridge buff") gradually becoming dull brown, edge soon becoming eroded.

Stipe 5 - 9 cm. long, 10 - 18 mm. thick, equal, solid, becoming hollow, base with a small abrupt bulb, surface whitish or pale yellowish, stained a dingy pale tawny where handled, slightly fibrillose from the thin pallid cortina.

Spores 7 - 8 x 3.2 - 4 μ , oblong in face view, mostly slightly bean-shaped in side view, pale dingy cinnamon in KOH, smooth, apical pore minute; basidia 4-spored, 15 - 18 x 5 - 6.5 μ , yellow in KOH; pleurocystidia abundant, mostly fusoid-ventricose with rounded apices 50 - 75 x 12 - 18 μ , content yellow and homogeneous or with amorphous masses highly refractive in KOH variously distributed (not true chrysocystidia), content often generally ochraceous in addition, clavate to ellipsoid cystidia with refractive

Pholiota Sm-28421, cont.

content 30 - 48 x 10 - 18 μ also present; cheilocystidia generally like the pleurocystidia only smaller; gill trama with a wide floccose subparallel to interwoven central strand flanked on either side by a narrow gelatinous subhymenial layer; pileus trama floccose-interwoven and hyaline in KOH; hypodermal zone of compactly interwoven dark rusty brown pigment incrusting narrower hyphae and pellicle an obscure turf of tangled hyphae 2 - 4 μ in diam. hyaline near surface and yellow next to hypoderm - from which they arise; clamp connections present.

Habit, habitat and distribution: Gregarious by a conifer log, Larch Mt., Oregon (Columbia Gorge), 4,000 ft. elev., Oct. 30, 1937, Sm-28421.

Observations: This has the stature of P. lubrica but is characterized by a cortinate veil, paler colors, more broadly rounded pleurocystidia many of which show progression toward the chrysocystidial type, and by the short decurrent gills.

Kauffman (1926-29) says it is
Paxillus scambus (Fr.) Gmel.

57

X

Pholiota scamba (Fr.) Kuhnner & Romagnesi ?

Agaricus scamba

Flammula scamba

Naucoria caespitosa Murrill, North Am. Fl. 10: 180. 1917.

Pileus 15 - 30 mm. broad, obtuse to convex when young, the margin incurved, expanding to broadly convex to plane with or without a low obtuse umbo, evenly "pinkish cinnamon" over all or nearer "pinkish buff" over margin, surface covered by a mat of radially disposed fibrils, viscid beneath the fibrils, margin appendiculate with pinkish cinnamon fibrils; flesh very soft and watery-cartilaginous, watery yellowish, odor faintly fragrant, taste mild.

Lamellae close (26 - 28) some forked near base, lamellulae in 3 tiers, "cartridge buff", (pale yellow) horizontally adnate with a slight tooth, moderately broad (3 - 3.5 mm.) tapering from stipe to cap margin, rarely ventricose, edges even.

Stipe short, 1.5 - 3 cm. long, 2 - 3 mm. thick, curved, base with numerous pinkish cinnamon rhizomorphs and somewhat strigose, equal, solid, fleshy, pale yellow within, apex pale clear yellow ("sea foam yellow"), and minutely fibrillose-squamulose, below the apical fibrillose annular zone with a sheath of fibrillose veil material which finally breaks up and weathers away.

Spores 7 - 8 x 4 - 5 μ elliptic in side view, slightly ovate in face view, pale cinnamon brown in KOH, smooth, apical

Pholiota scamba (Fr.) Kuhnner & Romagnesi ?, cont.

pore minute; basidia 4-spored, $20 - 23 \times 7 - 8 \mu$, hyaline in KOH; pleurocystidia abundant, broadly ventricose with a slight neck, and an obtuse to rounded apex occasionally with a few incrusting particles adhering, hyaline and homogeneous in KOH, thin-walled; cheilocystidia essentially similar to pleurocystidia; gill trama with a central strand of hyaline floccose tissue and translucent subhymenial hyphae diverging from it to hymenium, all hyaline in KOH; pileus trama with a floccose hyaline tramal body, a rusty brownish hypoderm and a thick gelatinous pellicle of appressed rough-walled, nearly hyaline, hyphae; clamp connections present.

Habit, habitat and distribution: Cespitose to gregarious on very rotten conifer logs or near them, frequent in the Pacific Northwest, rare in the Great Lakes Region, late summer and fall.

Observations: This species appears to have no close relations.

58

X

pholiotella
Pholiota Sm-20037. ✓

Pileus 2-3.5 cm. broad, convex becoming nearly plane or retaining a very slight umbo, surface viscid, at first covered with very delicate pale greenish yellow superficial scales from the universal veil, finally glabrescent and + fibrillose streaked beneath the pellicle, color "bone brown" young, with a greenish yellow margin in age and disc dark dull vinaceous brown; flesh moderately thick and firm, pale yellowish white, taste none, odor faintly fragrant.

Lamellae "barium yellow" becoming dull cinnamon brown, broad (5-7mm), equal, close, 2-3 tiers of lamellulae, broadly adnate becoming adnexed, edges even or nearly so.

Stipe 3-5 cm. long, 4-6 mm. thick, equal, tubular, "barium yellow" within, surface "pale dull green yellow" and fibrillose-furfuraceous over all from the veil remnants, somewhat glabrescent in age, base becoming sordid brown.

Spores 7-9 × 5 × 5.5-6 μ , elliptic in side view, broadly ovate in face view, dark rusty cinnamon in KOH, smooth, apical pore present (apex showing a hyaline spot but not truncate); basidia 4-spored, 26-30 × 7-9 μ yellow to hyaline in KOH; pleurocystidia abundant, 50-70 × 9-14 μ , fusoid ventricose with acute apices, hyaline to yellowish in KOH, color in the thin wall, smooth; cheilocystidia abundant, short & fat, 30-40 × 12-18 μ , broadly ventricose and abruptly tapered to an acute apex; gill trama a floccose strand flanked by gelatinous subhymenial tissue on either wide; pileus trama floccose-interwoven and yellowish (in KOH) beneath a rusty brown hypoderm of encrusted compactly interwoven cells, above this a gelatinous pellicle of interwoven, appressed,

Pholiota Sm-20037. Cont.

yellow hyphae 3-5 μ in diam., with encrusted walls; clamp connections present.

Habit, habitat and distribution: caespitose gregarious on rotten conifer wood, East Fork, Salmon River, Mt. Hood, Ore.

Oct. 20, 1944. Sm-20037.

Observations; The slender stature, ovoid spores and dark vinaceous brown pileus are distinctive.

Coll. #4917
not found

X

Pholiota paludosella (Atk.)

Naucoria paludosella Atkinson, Jour. Myc. 12: 193. 1906.

Pileus (2) 3 - 5 (6) cm, broad, obtuse to convex with an incurved margin, expanding to broadly convex to plane and at times with an obtuse umbo, more or less decorated with fibrillose squamules or patches from the remains of the buff-colored veil, more or less glabrescent, margin fringed with veil remnants at first, ground color pale cream except for the tawny disc, viscid but soon dry, ~~resilient~~ ^{pliant}, yellowish; odor and taste not distinctive.

Lamellae ~~close~~, ^{close,} sinuate, narrow to moderately broad, yellowish becoming cinnamon brown and drying paler, pliant and gelatinous (hard to section), edges even.

Stipe 3 - 6 (8) cm, long, 3 - 4 (5) mm, thick, equal or ^{or bulbous,} nearly so, pliant, floccose-squamulose up to the annular fibrillose zone left by the broken veil, apex pruinose and yellowish, becoming tawny to russet below and ⁺glabrescent.

Spores 7 - 8.5 x 4.5 - 5 μ , ovate in face view, obscurely inequilateral to subelliptic in side view, dull tawny in KOH, smooth, apical pore minute but visible under ordinary magnifications; basidia 4-spored, 17 - 20 x 6 - 7 μ , hyaline in KOH; pleurocystidia rare to abundant (occurrence sporadic), 38 - 52 x 10 - 14 μ , fusoid ventricose with narrow necks and obtuse apices (neck 5 - 7 μ thick), smooth, hyaline in KOH, thin-walled; cheilocystidia abundant, subcylindric to

Pholiota paludosella (Atk.), cont.

narrowly fusoid-ventricose with obtuse apices, hyaline, in KOH, thin-walled, smooth; gill trama with a parallel central strand of floccose hyphae flanked on either side by broad zones of gelatinous subhymenial tissue (all hyaline in KOH); pileus trama floccose and interwoven, hyaline in KOH and homogeneous to the gelatinous pellicle of hyphae ochraceous from incrusting pigment and 3 - 6 μ in diam.; clamp connections present.

Habit, habitat and distribution: Scattered on hummocks of sphagnum, in bogs, Great Lakes Region, late summer and fall. Sm-4917. Sept. 20, 1936, George Reserve, Pinckney, Mich.

Observations:

Pholiota Sm-9218. -

P. velutiginosa

Notes by Smith

Pileus 3-6 cm, broad, convex becoming plane or the margin elevated and wavy, glutinous to viscid, the marginal area decorated with thin patches of fibrils, and often more or less appendiculate from the remains of the glutinous partial veil, color "cameo brown" over all but becoming "Sorghum brown" on the margin or nearly "wood brown" (paler), appearing finely fibrillose-streaked beneath the pellicle; ^{Cortex} flesh pliant, greenish yellow, buff color in age; odor and taste not distinctive.

Lamellae ~~close~~, ^{broad, not close,} broad, adnate and with a slight decurrent tooth, near avellaneous but becoming "wood brown" at maturity, edges even.

Stipe 3-6 cm, long, 4-8 mm, thick, equal, hollow, with an apical glutinous evanescent annulus, silky and greenish yellow above, coated with appressed buff yellow fibrillose patches or concentric zones below annulus, becoming rusty stained where handled and dark rusty brown below in age.

Spores 6.5-7.5(8) x 4.5-5 μ , broadly elliptic to ^{and} ~~ovate~~ ^{ovoid} in face view, obscurely bean-shaped in side view, tawny to cinnamon in KOH, smooth, apical pore very minute; Basidia 4-spored, yellowish to hyaline in KOH. 20-22 x 5-6 μ ; Pleurocystidia abundant, 55-80 x 10-18 μ , fusoid-ventricose with obtuse to subacute apices, many with slightly thickened walls in the ventricose part, mostly with yellow content (especially in the neck) and some showing refractive material (aggregations of needles) in or near the apex; cheilocystidia similar to pleurocystidia or smaller; Gill trama with a floccose-centrals strand of \pm parallel hyphae flanked by

(Phoma Sm-9218. Cont.)

a gelatinous subhymenial layer on either side; Pileus trama floccose-interwoven, hyphae yellowish-hyaline in KOH; hypodermium of dark brown, compactly interwoven hyphae, rather narrow (4-8 μ) and walls incrustated; Cuticle a gelatinous layer of hyphae apparently appressed at first but becoming widely separated and interwoven, most of them incrustated and yellowish in KOH; Clamp connections present.

Habit, habitat and distribution: Scattered on humus under Pinus ponderosa, Cave Junction, Oregon, Nov. 29, 1937. Sm-9218.

Notes by Hester

Spores 6-7.5(8) \times 3.7-4.5 μ , ellipsoid or ovoid in face view, subphaseoliform in profile, smooth, germ-pore rarely seen, minute. Basidia 22-~~26~~²⁶ \times 5-6 μ , 4-spored. St 57-73 \times 10-19 μ , ventricose; Ch 32-63 \times 10-19 μ , ventricose. Gill trama a mediotrate, hyphae subparallel, Pileus trama \pm radial. Cuticle a gelatinous zone, resting on a brown hypodermium, walls incrustated. Clamp connections present. Caulocystidia 42-58 \times 7-20 μ , fusoid, or ventricose + similar to ch. The gelatinous veil + pileus color are distinctive.

Pholiota ~~Gruber~~ *Laracina* Idaho no. 41

Pileus 1-3(4) cm/ broad, very obtuse to broadly convex when young, the margin incurved, at maturity varying from broadly convex with a slight umbo to plane or shallowly depressed, surface glabrous and slightly viscid at first, no veil remnants formed, the thin margin sometimes lacerated, color "cinnamon brown" to "buckthorn brown" and gradually fading through "clay color" to "pinkish buff", when dried assuming a tinge of reddish-cinnamon ("Mikado brown") at least in places; ^{Context} flesh thin, pallid; odor not distinctive, taste mild to slightly ~~f~~^rorinaceous.

Lamellae crowded, narrow, bluntly adnate or rounded next to the stipe, at times appearing subdecurrent when pileus margin is uplifted, 2-3 tiers of lamellulae, near avellaneous when young, becoming dingy clay color to cinnamon brown in age, edges even or sometimes slightly eroded.

Stipe 3-6 cm/ long, 3-6 mm/ thick at apex, equal or flared above, usually with a somewhat bulbous base caused by adhering sand bound together by mycelum, hollow, whitish but finally becoming sordid brown over lower portion, lower half sparsely fibrillose, upper part more or less white-furfuraceous to pruinose (no veil seen but fibrils over lower part of stipe indicate a slight cortina).

Spores "cinnamon brown" in mass, $7-8.5 \times 4-4.5 \mu$, smooth, ellipsoid, apical pore minute (not evident at ordinary magnifications), pale cinnamon brown in KOH; Basidia 4-spored, $19-23 \times 5-6 \mu$, projecting slightly when sporulating; Pleurocystidia abundant $56-74 \times 10-14 \mu$, fusoid-ventricose with obtuse to subacute apices, hyaline to yellowish in KOH; cheilocystidia abundant,

yellowish in KOH, smooth, clavate to saccate or ventricose with scarcely and projecting neck, or neck short and thick; Gill trama ^{trama} of floccose, parallel hyphae, \pm hyaline in KOH, flanked by gelatinous subhymenial tissue; Pileus trama with a thin hyaline gelatinous pellicle over the surface, beneath it a hypoderm of pigment-incrusted, reddish brown hyphae, the remainder of the trama floccose and yellowish hyaline in KOH; Clamp connections present.

~~Habit, habitat and distribution: Locate collection and get rest of data!~~

Notes by Hesler

Spores $6-7.5 \times 3.5-4\mu$, ellipsoid to subovoid in face view, inequilateral in profile, smooth, germ-pore minute. Basidia ²⁰~~23~~- $26 \times 5-6\mu$, 4-spored. P. $57-76 \times 10-12\mu$, ventricose, the stalk ^{comparatively} short ($6-10\mu$), the neck long ($37-48\mu$); ch. $26-34 \times 7-10\mu$, short-ventricose or flat bottle-shaped, at times ~~capitate~~ capitate, obclavate, or fusoid. Gill trama a mediocrate, hyphae $4-7\mu$ broad, flanked by a gelatinous subhymenium. Pileus trama radial. Cuticle a narrow (thin) gelatinous zone. Hypodermium brown, some hyphae incrusted. Clamp connections present. Caulocystidia in tufts, clavate, some with a brown pigment, $52-110 \times 6-12\mu$.

My spore-measurements taken from spores in deposit, * as well as from crushed gills.

X

Pholiota lubrica (Fr.)

Agaricus lubricus Fries, Syst. Myc. 1:252. 1821

Flammula lubrica (Fr.) Quélet, Champ. Jura et Vosges
p. 251. 1872.

Dryophila lubrica (Fr.) Quélet, Enchir. Fung. p. 70. 1886.

Fileus (4) 5 - 10 (12) cm. broad, convex to obtuse when young, the margin incurved, expanding to obtusely umbonate or plane, the margin finally spreading or recurved, surface glutinous, at first with scattered fibrillose squamules from the remains of a veil, glabrescent except for the margin which may be decorated veil remnants, tawny on the disc and yellow to orange or orange-cinnamon toward the margin ("tawny on disc, remainder "cinnamon buff" to "ochraceous orange" or "zinc-orange"); flesh thick, pliant, pallid to pale avellaneous, odor none, taste slightly nauseous (odor of radish - Kauff.).

Lamellae bluntly adnate becoming subdecurrent, at times somewhat adnexed, and toothed, close to crowded, 61 - 73 reach the stipe, 2 - 3 tiers of lamellulae, broad (up to 10 mm.), white to pallid, soon "wood brown" to "tawny olive", edges uneven.

Stipe 4 - 7 (12) cm. long, 10 - 15 mm. thick, equal, solid, in age hollowed, white near apex and silky, coarsely fibrillose lower down or somewhat scaly white at first but gradually dark rusty brown in age.

Pholiota lubrica (Fr.), cont.

Spores rusty brown in mass, $6.5 - 8 \times 3.5 - 4 \mu$, smooth, pale tawny in KOH, elliptic to narrowly ovate in face view, obscurely bean-shaped in side view, apical pore very minute; basidia 4-spored, $19 - 26 \times 4 - 6.5 \mu$, hyaline in KOH; pleurocystidia $50 - 75 (80) \times 9 - 17 \mu$, fusoid-ventricose, apices obtuse to subacute, content yellow to hyaline in KOH; walls often slightly thickened in the ventricose portion; cheilocystidia like the pleurocystidia but usually smaller; gill trama of floccose hyphae in a central strand and flanked by gelatinous subhymenial tissue; pileus trama with a thick gelatinous pellicle of hyphae $2.5 - 4 \mu$ in diam., yellow to hyaline in KOH, hypodermal region colored rusty yellow in KOH, remainder of tissue floccose-interwoven and hyaline; clamp connections present.

Observations: Compare with Stanley Lake species.

The spores are larger than usual; but Smith has some collections in which the spores are up to 8μ long.

subferruginea
 Pholiota Sm-33-1092.

Pileus 2-3 cm/ broad, convex to plane, margin remaining inrolled, subviscid, opaque when fresh and not hygrophanous, "tawny" on the disc, "light buff" on the margin, covered on the disc by appressed almost ferruginous, spot-like scales, margin with more fibrillose lighter colored squamules from the "ochraceous buff" veil; ~~flesh~~ ^{contex} rather pliant, buff colored; odor and taste mild.

Lamellae sinuate to adnexed, close, broad, equal or tapering abruptly at the margin, whitish then dull brown, edges minutely white-fimbriate.

Stipe 3-5 cm/ long, 4-6 mm/ thick, equal, tubular evenly ochraceous buff and densely fibrillose from remnants of the veil, somewhat tawny toward base, apex yellowish and pruinose.

Spores 8-10 x 5-5.5 μ , ovoid to ellipsoid, dark tawny in H₂O fresh, buckthorn brown in KOH, paler in Melzer's sol., smooth, apical pore very minute and apex not truncate; Basidia 4-spored, 30-35 x 6-7.5 μ , hyaline in KOH; Pleurocystidia scattered, 40-56(70) x 10-14 μ , fusoid-ventricose with obtuse apices, hyaline in KOH, smooth; cheilocystidia 40-50 x 10-14 μ , oval to subcylindric, some slightly ventricose with broadly rounded apices, hyaline and smooth in KOH; Gill trama with a broad band of parallel floccose hyphae color less in KOH flanked on each side by a narrow gelatinous subhymenium; Pileus trama with a gelatinous pellicle of ochraceous tawny incrusted

Pholiota Sm-33-1092. Cont.

hyphae, interwoven and appressed; tissue beneath floccose-interwoven and hyaline; ^Cclamp connections present.

Habit, habitat and distribution: Solitary to scattered on debris of Larix, Silver Lake, Dexter, Mich. Oct. 5, 1933, Sm-33-1092.

Observations: The large spores, tawny yellow pellicle, hyaline obtuse pleurocystidia, and relatively heavy veil are distinctive. The specimens were dried on waxed paper and melted parafin is pretty well distributed as amorphous particles on the hymenium.

acuticonica

X

Pholiota Sm-19315.

Notes by Smith

Pileus 3-6 cm/ broad, conic with an incurved margin, expanding to conic-campanulate, or conic umbonate, the umbo acute, surface viscid, fibrillose-streaked (virgate) beneath the viscid pellicle, margin with thin patches of the fibrillose remains of the veil, "tawny olive" on disc "honey yellow" on margin or at extreme edge "Reed's yellow"; ^{Gills} ~~Flesh~~ pliant, thin except on the disc, near "honey yellow" (more dingy than gills); odor none, taste mild.

Lamellae moderately close, 3 tiers of lamellulae, broadly adnate becoming subdecurrent, moderately broad (5-6 mm/ near stipe) tapered to cap margin, "Reed's yellow" young, finally dingy clay color, edges even.

Stipe 5-7 cm/ long, 5-8 mm/ thick, equal, hollow, when young "Reed's yellow" over all and fibrillose from "Reed's yellow" veil remnants, apex silky and "citron yellow", gradually becoming "sepia" inside and out from the base upward, cortex yellow, pith usually worm-eaten and tawny in color.

Spores $6.5-8 \times 4-4.5 \mu$, obscurely ovate to elliptic in face view, obscurely bean-shaped in side view, soon, tawny after standing a short time in KOH, apical pore very minute. Basidia 4-spored, $12-25 \times 6-7 \mu$, sections of hymenium lemon yellow in KOH. Pleurocystidia abundant, fusoid-ventricose, $48-66 \times 9-15 \mu$, with long necks and obtuse apices, neck content yellow in KOH, smooth, thin-walled; cheilocystidia $26-42 \times 9-12(14) \mu$, clavate to mucronate or fusoid-ventricose, walls yellow in KOH, content in some reticulated, apices obtuse; gill trama with a ⁰ floccose

Pholiota Sm-19315. Cont.

interwoven central strand, yellowish in KOH, the subhymenium showing on some sections as a very narrow flanking, subgelatinous tissue. Pileus trama ^{lo}flaccose-interwoven and yellow to hyaline in KOH, with a rusty brown hypoderm (in KOH) of compactly interwoven hyphae with incrustated walls and above this a thin gelatinous pellicle of appressed narrow yellow hyphae 3-5 μ in diam.* Clamp connections present.

Habit, habitat and distribution: Cespitose gregarious around a conifer fence post, Rhododendron Oregon, Oct. 1, 1944
Sm-19315.

Observations: The small spores are like those of the spumosa group but the other characters are more like the malicola group — namely the conic yellow ^acap, yellow gills and yellow veil as well as the very poorly developed (subgelatinous gelatinosity of the subhymenial tissue.

63
Pholiota spumosa (Fr.) Sm-278

not found

Pileus (2) 3 - 6 cm/ broad, obtuse to convex, becoming expanded to plane or with a slight umbo, margin often abruptly decurved, glutinous to viscid, glabrous but appearing fibrillose streaked beneath the gluten, when young, "olive" to "brownish olive" on disc and "Ecrú olive" near the margin, becoming yellower with age, (margin "deep colonial buff" or "reed yellow" and disc near "ochraceous tawny") *Context* ~~flesh~~ picric yellow, pliant; odor and taste not distinctive.

Lamellae moderately broad, equal or tapering slightly at the margin, adnexed to depressed adnate, usually with a decurrent tooth, when young "citron yellow", becoming dingy tawny but greenish hue always present.

Stipe 4 - 10 cm/ long, 6 - 8 mm/ thick, equal, fibrous, solid or finally hollowed, "picric yellow" above, dingy greenish yellow to brownish below, loosely fibrous and fibrous-striate from longitudinal separation of cuticle; veil thin and fibrillose, not leaving any distinctive remnants, the cap margin often with a slight fringe at first.

Spores 6.6 - 8 x 4.5 - 5 μ , elliptic in face view, obscurely bean-shaped in side view, smooth, tawny in KOH, apical pore very minute; *B* Basidia 4-spored, 20 - 23 x 6 - 7 μ , ~~filiform~~ fusoid-ventricose, mostly tapered fairly evenly to an obtuse apex but in age neck may be quite elongated, often with an ochraceous orange to orange brown content in the neck, smooth,

Pholiota spumosa (Fr.) Sm-278, cont.

thin-walled; cheilocystidia similar to pleurocystidia but smaller and with less neck; Gill trama with a central floccose strand, flanked on either side by gelatinous subhymenial tissue; Pileus trama of floccose-interwoven hyphae, rusty brown in KOH beneath the gelatinous pellicle of appressed narrow (3 - 5 μ) hyphae nearly hyaline in KOH and with slightly roughened walls; Clamp connections present.

Habit, habitat and distribution: Cespitose on conifer logs, North Creek Road, Adirondack Mts., New York, Aug. 30, 1934. Sm-278.

Observations: This is what I have called *F. spumosa*.

Note by Hesler: I have not found this collection.

hills
Pholiota Sm-12064 (see 12089 also). *not found* X 66
(Error in number? see 1289)

Pileus 3 - 6 cm. broad, broadly convex becoming plane, with an undulate or wavy margin in age, glabrous, viscid, in age the cuticle becoming broken into scales, veil fibrillose, remnants distributed along the margin, color "tawny" to "ochraceous tawny" on the disc, "ochraceous buff" near the "straw yellow" margin, partial veil "straw yellow"; flesh pale watery yellow, odor and taste not distinctive.

Lamellae adnate then shallowly adnexed, moderately close (39 - 43), 3 tiers of lamellulae, narrow (5 - 6 mm), nearly equal or slightly ventricose near apex, "marrioot yellow" young, sordid brown at maturity, edges even.

Stipe 4 - 5 cm. long, 5 - 6 mm. thick, equal hollow "straw yellow" and fibrillose young, base becoming tawny and thin umber brown, slowly darkening upwards, apex "amber yellow" inside but surface appearing whitish in age, remaining more or less fibrillose in central part.

Spores 7 - 8.8 x 4 - 4.5 μ , oblong in face view, nearly so in side view but varying to obscurely inequilateral because of a slight suprahilar depression, smooth, with a very minute apical pore, pale dull tawny in KOH, basidia 4-spored, 20 - 23 x 5 - 6.5 μ , yellow in KOH; pleurocystidia abundant, 50 - 65 x 10 - 15 μ , fusoid-ventricos^e with obtuse apices, with dark orange-brown wrinkled content in KOH; cheilocystidia similar to pleurocystidia or smaller, gill trama with a broad floccose central strand flanked on either side by a narrow gelatinous subhymenium; pileus

Pholiota Sm-12064 (see 12089 also) Cont.

with a gelatinous cuticle of narrow ($3 - 4 \mu$) interwoven yellow (in KOH) hyphae, with a rusty brown hypoderm beneath this, with pigment encrusted on the cells, tramal body of yellowish hyaline floccose interwoven hyphae; clamp connections present.

Habit, habitat and distribution: Subcespitose on peaty soil among mosses (Funaria) Kololoch, Wash., April 27, 1939, Sm-12064 & 12089.

Observations: A new seeding of grass covered most of the area. Since the soil contained much lignicolous material one could assume that this fungus is typically terrestrial. I suspect it is P. spumosa or a closely related species.

Notes by Heder (on Sm-1289).

Spores (5.5) $6-8 \times 3.8-4.5 \mu$. Ch $36-55 \times 8-11 \mu$, fusoid-ventricose. Pileus trama radial. Otherwise, Sm-1289 is as described in Smith's notes on 12089, above.

Pholiota spinulifer (Murr.) comb. nov. —————→

← Naucoria spinulifer Murrill, Mycologia 4: 79. 1912.

Pileus 2 cm, broad, hemispheric-umbonate with a revolute margin, surface innate fibrillose, smooth, isabelline, testaceous on the umbo, cremecous at the margin.

Lamellae adnate, arcuate, of medium breadth and distance, dull purplish-isabelline.

Stipe 2.5 cm, long, 2.5 mm, thick, curved, cylindric, equal, subglabrous, stramineous above, fulvous below,

Spores 7 - 8 x 4 - 4.5 μ, smooth, dingy ochre brown, ovoid in face view, elliptic in side view, with a minute apical pore; basidia 4-spored, 6 - 7.5 μ broad; pleurocystidia abundant, 50 - 70 x 8 - 17 μ, fusoid-ventricose, thin-walled, yellowish in KOH, apices obtuse to subacute; cheilocystidia similar to pleurocystidia; gill trama subparallel and with a ⁺ gelatinous subhymenium; pileus trama with a gelatinous pellicle, floccose-interwoven and fulvous (in KOH) beneath the cuticle; clamp connections present.

Habit, habitat and distribution: On dead wood, Morce's Gap, Cinchona, Jamaica.

Observations: This is a member of the old Flammula carbonaria group. *See type*.

Pholiota pulchella sp. nov. (Sm-17083) →

Pileus 2 - 3.5 cm/ broad, obtuse when young, expanding to obtusely campanulate or finally nearly plano-umbonate in age, the margin usually decurved a long time, surface at first with scattered, delicate, yellow, fibrillose scales from the broken veil, viscid to glutinous and fibrillose-streaked beneath the gluten, usually with small patches of veil tissue along the margin, disc "natal brown", margin shading off to "pale olive buff", disc sometimes becoming "wood brown" to "avellaneous"; ^{rather} fresh thick ~~in on~~ the disc and tapered abruptly away from it, pliant, "olive buff" or \pm greenish watery gray; odor none, taste mild or faintly bitterish.

Lamellae broad (\pm 6 mm.), horizontal, bluntly adnate but soon slightly depressed and toothed, subdistant (24 - 28 reach the stipe, 2 - 3 tiers of lamellulae), "pale olive buff" or a little ^{more} ~~greener~~ when young, near "buffy brown" in age, or (more rusty finally) from the spores, edges ~~even but~~ fimbriate.

Stipe 3 - 6 cm/ long, 3 - 4.5 mm/ thick, equal or narrowed below, hollow, "chartreuse yellow" (greenish yellow) at least ^{at} the apex, surface "seafoam yellow" above, slightly brighter below, lower two-thirds covered by delicate zones or patches of \pm "clay color" fibrils which are the darkened remains of the veil, apical region delicately fibrillose-farinose, base delicately fibrillose-strigose.

Pholiota pulchella sp. nov. (Sm-17083), cont.

Spores $6 - 7.5 \times 5.5 - 6.5 \mu$, broadly elliptic to ovate in side view, broadly ovate in face view, dark buckthorn brown in KOH, pale buckthorn brown in Melzer's sol., smooth, apical pore present at a "callus"; basidia (2-) and 4-spored, $20 - 23 \times 5 - 6 \mu$, yellowish in KOH; pleurocystidia abundant, $50 - 70 \times 10 - 15 \mu$, fusoid-ventricose, yellowish and with encrusting material along the neck in KOH, cheilocystidia similar to pleurocystidia but smaller; grill trama with a floccose central layer yellowish in KOH flanked on either side by gelatinous subhymenium; pileus trama with a thick pellicle of gelatinous interwoven hyphae $3 - 5 \mu$ in diam., with yellowish walls and pigment incrustations; hypoderm present merely as a more highly colored layer (tawny), remainder of trama yellow in KOH; clamp connections present.

~~Habit, habitat and distribution: Solitary to scattered on debris under conifers, Mt. Angeles, Olympic National Park, Wash., Sept. 21, 1941, H. V. Smith (Sm-17083).~~

Observations: The broadly ovate spore and (possibly) the incrustations on the pleurocystidia are distinctive microscopically. The terrestrial habitat, small size and fairly heavy veil development are distinctive field characters.

Notes by Hervey

Spores $6 - 7.5 \times 4.5 - 5.5 \mu$, ovoid, double-walled, smooth, germ-pore present. Basidia $22 - 26 \times 6 - 7 \mu$, 2-4-spored. Pl. $50 - 71 \times$ over

(8) 12-15 μ , ventricose; ch. 42-53 x 8-15 μ ,
fusoid, rarely ventricose. Gill trama ~~is~~ a
mediocrate, hyphae slightly interwoven, 6-15 μ
broad, flanked by a gelatinous subhymenium.

~~Gill trama~~

X

bakerianus
Pholiota Sm=16727.

Pileus 2-5 cm/ broad, obtuse to broadly convex young, plane or disc~~x~~ broadly and shallowly depressed in age, the margin usually arched, surface viscid, opaque, "ochraceous tawny" on disc, near "avellaneous" over marginal area, with one or more concentric rows of agglutinated fibrillose squamules; ^{Context} flesh thin and pliant, pale watery avellaneous; ~~taste mild~~, odor faintly fragrant, ^{taste mild}.

Lamellae "tawny olive", short decurrent by a tooth or broadly adnate, 3-4 mm. broad, \pm equal, close about 32 reach the stipe and 2 tiers of lamellulae between each, edges serrulate.

Stipe 3-5 cm/ long, 3-5 mm/ thick, equal, solid or hollowed by worms, fleshy-pliant, surface pallid from a thin coating of pale buff fibrils, with an evanescent apical fibrillose zone, more or less glabrescent and thin "clay color" at least over lower part.

Spores 7-9 \times 4-5 μ elliptic to obscurely ovate in face view, obscurely inequilateral to obscurely bean-shaped in ^{profile} ~~face~~ view, dull tawny in KOH, smooth, apical pore minute; Basidia 4-spored, 18-20 \times 6-7 μ , yellow in ^{KOH} ~~KOH~~ in sections of hymenium; Pleurocystidia abundant, fusoid ventricose, 50-70 \times 9-14 μ , apices obtuse and often with refractive particles in the neck and apex, yellow in KOH from the pale colored wall which is very slightly thickened in lower neck and upper ventricose portion; cheilocystidia fusoid-ventricose to nearly elliptic-pedicellate, 30-40 \times 9-12 μ , some with refractive content (as in chrysocystidia), pale yellow in KOH, or similar to pleurocystidia in size or ^{shape} ~~sha~~; Gill trama with a ^o floccose central strand, flanked by very narrow

Pholiota Sm-16727. Cont.

subgelatinous subhymenial layers as revived in KOH (not evident on all sections); Pileus trama ^of^o f^olaccose-interwoven and hyaline to yellowish in KOH, ~~no~~ distinct hypoderm showing as a colored layer; Cuticle of appressed interwoven yellow (in KOH) incrustated hyphae 4-6 μ in diam. Clamp connections present.

Habit, habitat and distribution: Scattered on conifer sticks, Sept. 8, 1941, Park Creek, Mt. Baker, Wash., Sm-16727

Observation: The lack of a colored hypoderm, the very weak development of the gelatinous subhymenium, and the thin coating of buff fibrils on the stipe appear distinctive along with spores which go up to 9 μ long.

~~Pholiota Sm-16727~~

~~(Pholiota Sm-16727)~~

Pholiota gregariiforme (Murrill) comb. nov. (but check in Harding's thesis.)

Hebeloma gregariiforme Murrill, N.A.F. 10: 217. 1917.

Pileus 2 - 2.5 cm. broad, convex to expanded, surface smooth, glabrous, viscid, pale yellowish brown, sometimes slightly darker on the disc, margin entire, concolorous.

Lamellae adnate or slightly sinuate, subcrowded, many times inserted, rather narrow, creamy white, becoming pale dingy yellowish brown.

Stipe about 5 cm. long and 3 mm. thick, slender, concolorous, smooth, glabrous; veil slight, arachnoid, evanescent.

Spores 7 - 8.8 x 5 - 5.5 μ , broadly ovate in face view, in side view broadly elliptic or nearly so, smooth, no distinct apical pore, dark buckthorn brown in KOH; basidia 20 - 23 x 7 - 8 μ , 4-spored, greenish-hyaline in KOH; pleurocystidia abundant, fusoid-ventricose, 40 - 60 x 9 - 14 μ , apices obtuse, content often yellowish; cheilocystidia similar to pleurocystidia; gill trama with a floccose-interwoven central strand flanked on either side by gelatinous subhymenial layers; pileus trama of pale yellow floccose-interwoven hyphae beneath a pale tawny surface layer giving rise to a tangled turf of pale yellow narrow (2 - 3 - 4 μ) apparently subgelatinous hyphae; clamp connections present.

Habit, habitat and distribution: Gregarious on the ground, in a pine woods, Auburn, Alabama, Dec. 26, 1899. F. S. Earle (type).

Pholiota gregariiforme (Murrill) comb. nov., cont.

Observations: This is clearly a *Pholiota* in my concept (*Flammula* of Fries) characterized by the terrestrial habitat, rather broadly ovate spores in face view, the yellow color of the cuticular hyphae and arachnoid veil. As dried the type reminds of *Agrocybe pediades*.

X

Pholiota tottenii (Murrill)

Hebeloma Tottenii Murrill, N.A.F. 10: 220. 1917.

Pileus 2.5 - 4 cm. broad, convex to plane, usually becoming depressed, often slightly umbonate, surface smooth, glabrous, shining, reddish-tawny at the disc shading to whitish buff on the margin; flesh thin, pale buff, odor and taste not distinctive.

Lamellae sinuate, broad, not crowded, melleous to fulvous or brown.

Stipe 3 - 4 cm. long, 2 - 3 mm. thick, slightly tapering downward, smooth, hollow, whitish-buff above, reddish-tawny below, sometimes decorated near the base with long coarse white hairs.

Spores 7- 9 x 4.5 - 5 μ , elliptic in side view, -ovate to elliptic in face view, smooth, dark buckthorn brown in KOH, apical pore not evident; basidia 4-spored, 18 - 22 x 6 - 7 μ ; hyaline or ochraceous in KOH, pleurocystidia abundant, fusoid-ventricose 40 - 60 x 10 - 16 μ , hyaline or with yellow content revived in KOH, smooth, neck elongated and obtuse; cheilocystidia essentially similar to pleurocystidia; gill trama with a floccose central strand flanked by subgelatinous subhymenial layers (all parts of carpophore ochraceous to rusty as revived in KOH); pileus trama with a dark rusty brown hypoderm and a gelatinous pellicle of appressed yellow hyphae above it; clamp connections present.

Pholiota tottenii (Murrill), cont.

Habit, habitat and distribution: Gregarious to caespitose on ground under pines, Chapel Hill, N. C., December 10, 1914. Totten-1509.

Observations: This is obviously a member of the old Flammula spumosa group, in fact it may be too close to spumosa to be retained as a taxon. The type also substantiates this impression. The tissues revive poorly and are more rusty orange than usual, but in this instance I suspect the condition of being an artifact caused by poor drying.